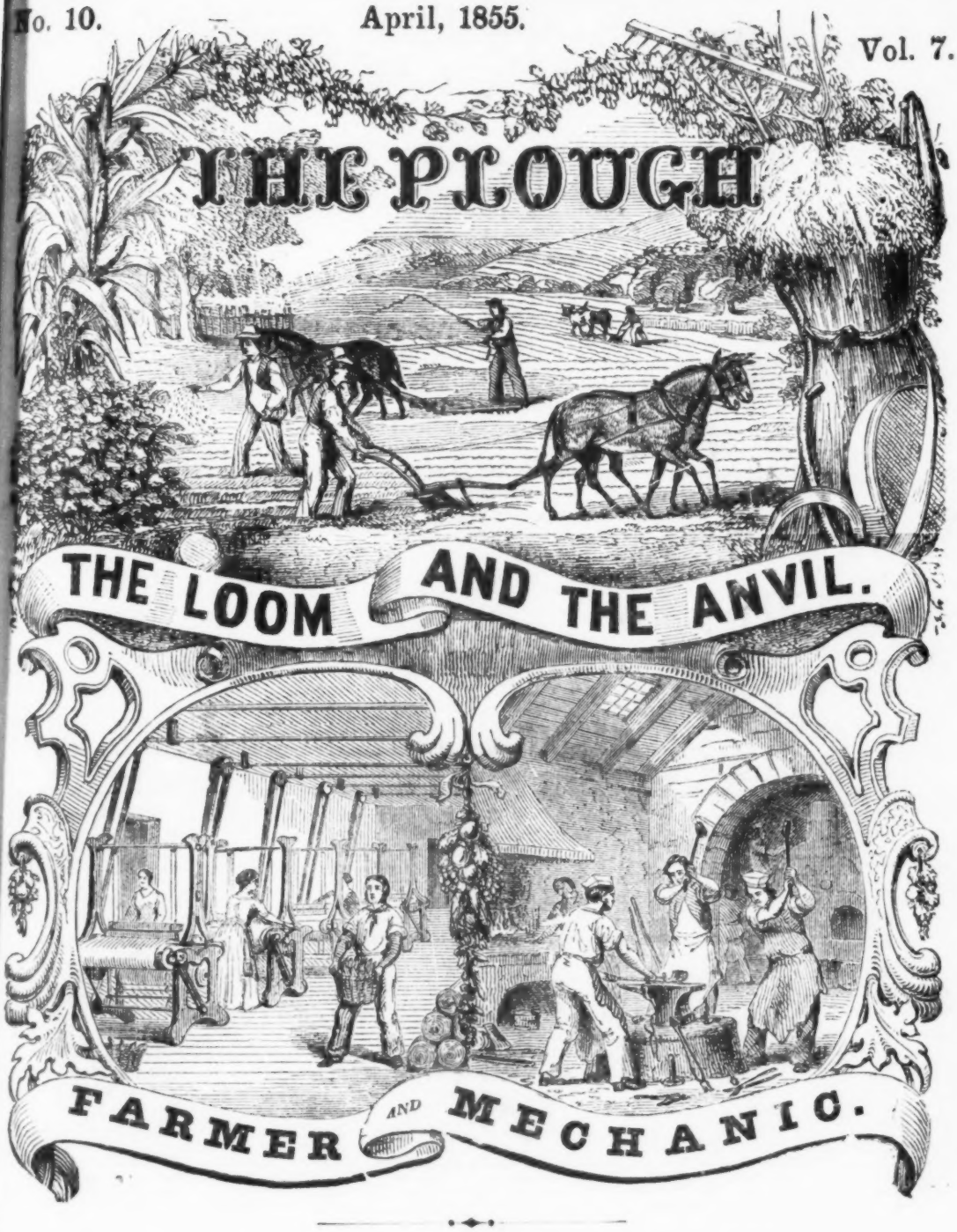
No. 10. April, 1855. Vol. 7.



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VOL. VII. APRIL, 1855. No. 10.

MANAGEMENT OF FAIRS—SYSTEMS OF PREMIUMS—WHO DESERVE THEM?

WE gave our views on this subject at some length, in our February number, but rather in general than in detail. The subject of premiums was discussed, and, in reference to the policy of the plan now generally adopted, it was contended that premiums are not for the particular benefit of those who obtain them, but that they are offered for the sake of their influence in securing a good exhibition. We now would very modestly suggest the expediency of a thorough change in this system of premiums.

But, before we enter farther upon the subject, we must insist on this: That a plan which is the best here or there, may not be the best plan, or even a good plan, everywhere. We are, by far, too much inclined to be imitators. This tendency often is good; sometimes it is ruinous. It may have been well, hitherto, to adopt the present system of premiums, but we have little doubt that there are sections of country where a change of system would operate beneficially. It may be that such sections are numerous and extensive.

We have shown, we think, that the premium was originally proposed as an inducement to those whose example was worth something, to attend our fairs with the products of their industry. Perhaps those who were in advance of their neighbors, in their style of farming, etc., and who would not expect to gain anything important at such gatherings, needed this almost absolute guaranty that they should make something out of such attendance. Men are selfish, even the best of them. But even selfishness exhibits itself in different forms, and may be controlled by other propensities, good or bad. Men are fond of showing the products of their own skill. How many there are whose "geese are all swans," who think no other person ever succeeded in this, that, and the other, quite so well as themselves. This is a weakness. But there are forms, variations, and modifications of this passion, some of which are highly useful to others, and are destitute of any trace of wrong. These propensities may sometimes very properly be encouraged.

What is it, under the present system, which draws exhibitors to the fair? Sometimes it is the least commendable form of this conceit; the mere love of self-laudation. They did not adopt any improved mode of cultivation, but, by some fortunate concurrence of favorable circumstances, the crop turns out much better than the average, and the result is, an exhibition of it. The

chance for a little money, in the shape of a premium, is also worth something, and, on the whole, the decision is in favor of the show.

Others make a calculation beforehand. They say, "here is good soil. Now I will do my best—expend a little extra money in guano and superphosphates, and get it all back, and more, too, in the value of the crop and the premium." This is better—it is good—positively commendable; but it is not the best.

The best and most worthy motive is, to become acquainted with, and to disseminate, the true principles of crop-growing; to develop the science of farming; to make for one's self, and for others, substantial, permanent progress in agriculture. A large crop a single year is no proof of good farming. But large crops for successive years, leaving the land in still better condition for the year to come, this is the true application of science to agriculture.

What hinders the attendance of nine out of ten of those who produce what is worthy of notoriety, and who yet absent themselves from our fairs? We do not hesitate to say, it is the EXPENSE which would thereby be incurred. "It will not pay," is the common form of expression. But this does not mean "it will not put money in my pocket;" but it does mean "it will take money out;" and more money than the amount of gratification it will secure is worth, or more than I can afford. If this is so, what is the plain, the obvious mode of overcoming this objection? Manifestly, to say to such, "It shall not cost you a mill."

Here, then, you have our proposed modification of the system of premiums. Say to all within your "jurisdiction," whoever will present anything on such occasions, which the committee shall deem worthy of exhibition, shall have all his necessary expenses paid to him *on the spot;* or his expenses on the ground shall be paid by the society, without cost to the exhibitor, in the time and manner they may have previously arranged, but his expenses in arriving and returning shall be paid at the close of the fair.

A similar plan might be adopted in reference to still more useful operations. We refer to the proper management and accurate record of useful experiments on a farm. Suppose, for example, the proper authorities should seasonably announce that all experiments, as to the most efficient mode of rendering sandy soils, similar to those prevailing on Long Island, or those in Georgia, fertile and productive for crops of wheat, or other given product, of the details of which, with all its proper antecedents, a minute diary shall be kept, as prescribed, duly authenticated, shall be entitled to so much, or to a reasonable premium, how much more instructive those operations would be.

The experiments now given to the public, even by skillful farmers, are of little value to science. So much is omitted that the importance of the facts stated can not be properly estimated. By well known mathematical rules, if three quantities, bearing certain relations to each other, are given, a fourth can be found. But these experiments would have us determine a result, hitherto unknown, by scarcely giving us ONE exact known quantity. They tell us that the land was a "rich loam," or clayey, or peaty, and that they put on certain manures. But they give us no analysis of the soil; no careful record of previous crops and former cultivations. Perhaps the application now made rendered soluble some fertilizer, applied years ago, but in an insoluble form. Perhaps the very *rocks* have contributed valuable elements. We have seen many instances of that kind, when not a spade or hoe had been applied. The magnesian rock, or argillaceous slate, or the feldspar, or something else, was doing much more than was dreamed of; or, perhaps, some phosphate, hitherto insoluble, was now rendered efficient; some lime-

stone decomposed; some—no matter what, so long as, whatever it is, small or great, all is unknown. There may have been no such agencies, but we do not know that it is so. To farm by such science, with scarcely one known quantity, is to tax the farmer with problems which the mathematician would never attempt to work out. One might as well write a correct biography of a man, when he has only had an imperfect account of his appearance and deportment, for a few days only, from one not familiar with the character of the subject to be described. Such, too often, is the actual condition of our farmers in their daily toils by which they gather all their income.

We have not wrought out the prominent idea here urged by an effort of our inventive faculties in our own sanctum. The thought is suggested by other operations that have proved eminently successful. For example. What kind of lotteries are most eagerly sought for by the masses of the people? They are those which have, or profess to have, as many *small* prizes as there are tickets. Those "gift enterprizes," all offer something to every number—there are no blanks—and they are eagerly sought after, whenever the people have confidence in the operators. We do not know of an exception among them all. In these, we admit, was the additional hope, the one chance in a thousand or more, of getting something great. But the features which made those people who never buy in other lotteries willing to incur this "risk," was that feature in it which secured them, as they supposed, from loss in any event. It is not the lottery alone which can array such efficient motives before the minds of men. There is no magic power in the lottery to urge men to action. The same controlling agency can as well be applied to a cattle show, or exhibition of crops, or of machinery; or, rather, we would say, it can not rightfully be overlooked, whenever we would determine the best method to excite the general attention of a community, especially when they do not properly appreciate the more substantial benefits which may be thereby secured.

Modifications of this plan might sometimes be desirable. If practicable, a moderate list of premiums, as now offered, might be retained; or even the entire list, if there is money enough, but only in subordination to the other mode of expenditure, and to be paid *after* all such bills are satisfied. The balance might then be divided, on some certain graduated scale, among the most deserving contributors. "Honorable mention," and the like, might also form a part of the system, as at present.

But what inducement has my neighbor, A., to offer anything at our fair, when he has already been assured that neighbor B. has produced, and will exhibit, something better? Neighbor C. is in the same condition. Hence, B. and C. both stay at home, and A. only exhibits; and, as nobody but A. exhibits, therefore nobody goes to see the exhibition. But, if A. and B. and C., etc., were going to exhibit, and made some little noise about it, they would awaken a general desire among the people to attend, and our fairs would be thronged.

WHO DESERVES THE PREMIUM?

We need not say, that it might happen that B. or C., whose products are less valuable than A.'s, are both better entitled to a premium than he. Is he the best farmer, who, in a single season, forces out of his grounds the *greatest* crop? By no means. A.'s grounds are in good condition. He bought them recently of one who took proper care of them, and all he has done is just to plant his seed, and, without especial skill or extra labor, let

his crop grow. And he finds in the fall, taking the affidavit of his *hired* man as evidence, that he has grown one hundred and twenty bushels of corn to the acre. Any fool might have done the same. Or, perhaps, he has been lavish in his expenditures on a given lot, doing what no one but a very rich man can do. But B. owns a farm consisting almost exclusively of sand. Still he is resolved to make a good soil, and hence he collects his leaves, and his turfs, and his clay, and his lime and ashes, and mixing all these with the strong products of his hog-pen, and with his manure-heap, and carrying out a thorough system of ploughing, and mixing, and a judicious growth of crops, on land that had produced only eight or ten bushels of wheat, or twenty or thirty of corn, he has grown forty or fifty of wheat, and eighty or ninety bushels of good corn. Who best deserves a premium for these crops? Who is entitled to the highest reward for good farming, from those who would reform our agriculture?

Is it said "we have offered a premium for *the greatest crop?*" Indeed! Do you give premiums, and "the highest premiums," for unwise, unscientific farming—for farming that costs, in the end, more than the value of the crops—for farming in which, if your hired man persisted, you would discharge him?

Some exhibitors buy their land already prepared for them, and thus secure "the best crop." But why pay a man for *buying* a good farm, or why *reward* a man for planting corn on good land, when he has it at command, while he does not exhibit any skill in his calling. Of course, if he has good land, he will use it; and, if he uses it at all, we might almost say, he will not fail of a good crop. But reformers should not give honor to a man for malpractice. No reward should be given for that, which, in its production, does not furnish evidence of peculiar skill, and is not worthy, EMINENTLY WORTHY OF IMITATION. If A. has, for a series of years, kept his land in good trim, so as always to produce good crops, reward him for it, if you will; but we insist that no "premium" should be paid for anything that is not, all things considered, worthy of especial commendation. One may be willing to pay expenses for a pleasing addition to a show, which otherwise may fail to attract general attention, when he would not be willing, as an agriculturist of skill and discernment, to declare that *for such a production*, the grower is entitled to be SINGLED OUT from all other competitors, and receive a premium, or be honored by a proclamation of "well done," to the neglect of a score of others, more industrious, and better informed, and, *in the end*, more successful, than he.

We have just laid down an exchange which illustrates our ideas on this branch of the subject. The editor says, in substance, that he has taken pains to get "the cream" of the doings of the agricultural societies, in his state, (Vermont,) and then "making a report in part," he proceeds to give a statement of a few of the sums paid as premiums to sundry exhibitors, and *attempts nothing else.* If this is "the cream," we don't care for the skim milk. But this is not the cream, nor even the skim milk. It is only the old horse that brought the milk to market. He wholly misapprehends his business as a teacher of good systems of agricultural labor and production, who teaches such doctrines. The premiums are the bait to draw public attention. The *mode of cultivation* is the prize to be won; and, if the matter is so managed, that *this* is not worthy of attention, then the whole concern is not worth a straw, and such societies may as well disband.

We do not think it well to honor with a medal, or its value in coin, the mere production of an extraordinary growth. If one has, by skill, produced

a soil capable of honestly sustaining a wonderful crop, HONOR HIM. Bestow upon him that meed of praise of which kings may not be worthy. Hence, we would not offer a premium for that cultivation that happens to produce the greatest number of bushels, without reference to the antecedents. That same state of Vermont, in the county of Windsor, recently presented a case bearing directly on this point. Two competitors for the prize, for the greatest crop of corn, reported exactly the same quantity per acre. Which shall have the "first prize?" To us the problem is perfectly simple—he who contended most skillfully against obstacles and embarrassments. But that point does not appear even to have entered into the minds of that committee.

We know not where to stop in writing on this subject. We commend these thoughts to all our agricultural societies. They have done like other societies long enough. We are fully persuaded that our annual shows are not managed as they should be; that, besides the personal favoritism sometimes exhibited, there is great want of judgment displayed in assigning premiums, and in awarding them; there is a great want of preparatory labor on the part of managers, in taking suitable measures to secure a good show, which is a most crying sin; and there is a great, even a fatal, want of means to make the good secured useful to the community. Here, inviting discussion on this whole subject, we pause for the present.

FLAX.

We have often commended this growth to the attention of farmers, and for the purpose of giving them the views of different writers, more or less familiar with the subject, we take from the *Valley Farmer* the following article, which we regard as worthy of careful attention. After commending this crop as one promising large and certain profits, the writer proceeds thus:

"The usual practice is to raise on the same piece of land, a crop of wheat one year, and the next year flax; sowing the flax early, so as to have it out of the way for the early wheat sowing, and after the wheat is taken off, the stubble and a good stock of clover is turned under by a fall ploughing. There are farmers that have pursued this course for twenty years, without exhausting the soil, and always reaping profitable harvests every year, avoiding the loss of every alternate year in summer fallowing, as is usual with most farmers. The flax crop, when sown thin, as is the practice when raising it for the seed, leaves the land in fine condition for almost any other crop—a fact which is not generally known or appreciated.

It is a very common practice to sow barley and flax together, as they mature and are harvested at the same time, and can be thrashed together, and the two very easily separated with suitable screens in the fan. This practice is meeting with much favor, and is said to be a very profitable method of cultivating both barley and flax-seed. Indeed, some farmers assert that the yield of flax-seed is not diminished by the growth of the barley, nor is the yield of the barley less on account of the flax-seed. But we give these items, more for the expectation that every farmer will make tests for himself, than that he will take the statements as settled facts for all kinds of farms in all localities. But nothing can be more certain than that the farmers throughout the entire West—the length and breadth of the Mississippi Valley can make the cultivation of flax-seed a very profitable crop, not second in value

to wheat, corn, or any other—the seed always commanding ready sale for cash, at high prices. It is a remarkable fact, that the demand for flax-seed has increased for the last year from one to two hundred per cent. The "Latourette Oil Works," of this city, completed and in operation the last year, are capable of consuming one hundred and fifty to two hundred thousand bushels per annum. The proprietors of these works are offering to contract largely, and offering every inducement to farmers to turn their attention more generally to the cultivation of flax-seed. The Collier Lead and Oil Works, of this city (H. T. Blow,) also consumes about as large a quantity of flax-seed annually. In addition to this, there have been several oil mills erected this past year, within the range of country trading with this city. We subjoin some practical directions.

NATURE OF THE SOIL.

Almost any kind of soil will grow flax-seed successfully, especially such as are adapted to wheat. If sown on rich bottom lands, you get a luxuriant growth of straw, but not so much seed as when sown on upland. Clay, hardpan, or sandy lands, are better for a good yield of seed, though rich loam, or prairie lands are good, especially if they are rolling and well drained. It must be borne in mind that a selection with a view to a good crop of seed is quite different from one for a good crop of fibre—the one requiring a harder, dryer soil; while the other should have a low, rich, moist land. A dry season is favorable to a crop of seed, while a wet season is almost indispensable to a good crop of the fibre.

PREPARATION OF THE GROUND.

The ground for flax-seed should be ploughed the fall before, and again in the spring, and finally pulverised with a heavy drag. Thorough deep ploughing and pulverising the earth, as far as possible, should never be neglected. The seed should be sown broadcast, and should have as light a covering of earth as possible, and, to this end, a brush should be used instead of a drag, so as not to cover the seed too deep. The field should be laid off in furrows or *lands*, and trenches run with the plow to carry off the surplus water.

TIME OF SOWING.

It may be sown as early in the spring as can be done with safety against frost. Many persons pay no attention to frost, and sow quite early, some even sow it on the snow in February or March, as about nineteen cases in twenty the frost does not injure it; but there is a particular stage of the growth of the young sprout, when, if the frost takes it, it will perish, which gives the preference to ordinary spring sowing. If not sown till rather late in the spring, it frequently does not get sufficient growth before dry weather overtakes it. Therefore, sow late enough to avoid frost, and early enough to secure early spring rains.

KIND OF SEED.

Particular attention should be taken to get large, full, and well-matured seed for sowing. Where the crop has been very thick on the ground, the stalk is pale and weakly, and does not afford sufficient maturity for the berry, and seed from such a crop should always be avoided. The best plan is to have one corner of a field sown on purpose to get seed for sowing the next year; and on this corner, the less seed you can get evenly scattered over the

ground, the more vigorous and matured will be the stalks and the seed. There are different varieties of flax-seed, and some are preferable to others for their seed yielding and oil producing qualities. But it is so difficult to get any pure species, it is, perhaps, better to disregard varieties, and select seed for its apparent goodness. Always sow pure flax-seed, without any mixture of foreign seeds. Too much care cannot be taken on this point. Be particular to riddle out all yellow grass, cockle, mustard rape, or other seeds, and starting with a pure seed, you will have no difficulty with foul stuff, and will always have the greatest yield per acre, and obtain the highest price when you market your seed.

QUANTITY OF SEED.

Much difference of opinion exists in regard to the quantity of seed to be sown per acre, but the probability is, that the quantity should be varied according to the condition of the ground, season, &c. The most successful raisers practice very light sowing, some even as low as eight quarts per acre; but a fair average quantity, for all farms and all circumstances is, say from twelve to twenty quarts, when the crop is cultivated exclusively for the seed —thus securing plenty of room for the stalks to stand upon the ground and spread out their branches, and give the sun access to their roots, and securing strength of earth for nourishment and maturity of the stalk. When sown thin, the stalk branches nearly down to the ground, and each branch is loaded with bowls. When sown thick, the stalks are spindling and weak, and often have but a single berry on the top, and, perhaps, no seed at all, besides exhausting the soil to a wonderful rate. A piece of ground that has been burthened with a thick mass of flax fibre, is good for nothing for years after. When sown thin for the seed, the fibre is very short and coarse; and in the new linen process, as well as for the paper mills, is quite equal to the fine fibre. In Ireland, where the finest linen is produced, it is not uncommon to see as much as twelve bushels of seed sown to the acre, so that the stalks are little above fine threads, growing up through each other in a dense mass, and producing no seed at all. In Russia, the German States, and other portions of Europe, and in India, the quantity sown is regulated more to a view of both seed and fibre, and the quantity ranges from $1\frac{1}{4}$ to $2\frac{3}{4}$ bushels per acre.

TIME OF HARVESTING.

Flax-seed should be cut before it is ripe, when the boils are beginning to pass from the yellow to the brown color, and it is better to let it lie a few hours if the weather is dry, before binding it up, so that the seed can fill and ripen from the nutriment remaining in the stalk. If it is left standing till it is quite ripe, a large proportion of the seed will be lost in gathering the crop.

MANNER OF GATHERING.

The crop can be cut with the cradle, or in any of the usual modes. After laying in the swath a few hours, it should be bound up in bundles and put in stack, or barn, secure from the weather. Some farmers mow the crop the same as hay, and handle it in bulk; but the best way is to cradle, rake, and bind in bundles.

THRESHING —TIME AND MODE.

It should be threshed as early in the fall as possible, and in a time of dry weather, for if it lies too long, the seed is apt to adhere to the shell, and is more difficult to thresh and clean up, and for the same reason, it should not be threshed in damp weather.

CLEANING UP AND MARKETING.

The seed should be cleaned up on a barn floor, and in still weather. When it is cleaned up in the field, or when the wind is driving dust about, the dust and dirt gets in with the seed, and a great deal adheres to the seed, in spite of all efforts to clean it with the fan, causing it to look dull and dusty, and the oil makers will not buy it as prime seed. When it is cleaned up and ready for the market, it should be put into new, strong bags; for there is no other seed, or grain, that will creep out of so small a hole, or that is so likely to burst the bag. If the seed is plump and clean, and your half-bushel is correct, you will find that it will more than hold out by weight. The standard weight of a bushel is fifty-six pounds, and you will find that prime seed will go sixty pounds."

THE FLAX MANUFACTURE.

THE effect of the present European war on this great branch of agricultural products, was discussed at the annual meeting of the society for the promotion and encouragement of the growth of flax in Ireland. The views there presented ought to have an interest in the minds of our farmers. We copy the following paragraph, in relation to this subject, from *The Practical Mechanic's Journal.*

"The proceedings of the meeting just held at Belfast, under the presidency of the Marquis of Donegal, hold a conspicuous position in the more important affairs of the day, embracing the several heads of the effects of the war on our flax culture, and the proceedings taken by the committee thereon—the Irish flax crop of 1854, the operations of the year, markets in new districts, saving of seed, the recently patented systems of steeping, unsteeped flax fibre, conversion of flax tow into wool, scutching machines, new scutch mills erected, new varieties of flax, intercourse with foreigners, exports of Irish flax and tow, and a special report by the "Belgian Instructor" on the growth of hemp. The question as to the effects of the Russian war on this trade, neeessarily assumes a serious aspect, when it is remembered that out of an imported aggregate of 80,000 tons of flax, nearly 60,000 comes from Russia, whilst some three-fourths of the seed sown in Ireland also comes from Riga. Prussia has, however, so far acted as an outlet of this Russian produce, so that we have not yet felt any change. Still, for "profit and loss" reasons on the part of the Irish farmers, the amount sown for the present year in Ireland, is only 150,972 acres against 174,579 in 1853; but as the yield in 1853 was inferior, it is believed that the marketable fibre this year will be equal to the last crop. Its value is taken at about £2,000,000. The saved seed is of much greater amount than formerly; a single landed proprietor in Cork having the produce of 2,400 acres, whilst a firm in Derry holds 2,000 barrels. Fourteen steeping establishments are now in operation in Ireland, carrying out the modern patented methods of treatment. In some, a portion of the flax is steeped in open air tanks, but all of them press the flax straw between rollers after its removal from the steep, and from this reason the fibre shows a marked improvement. The importance of the rettery system, as enabling the grower to sell his flax crop without getting involved in the processes of steeping, drying, and scutching, is evinced in the fact, that large

retteries are now at work in England, Scotland, France, Belgium, Holland, Austria, Prussia, and Bavaria. The present unmechanical process of scutching seems to be now gaining some improvement, for the attention of very many inventors has been drawn to the subject. The government returns show the number of scutching mills in Ireland, in 1853, to have been 1,056, with 5,871 stocks; there having been in 1852 but 956 mills, with 5,871 stocks. The *Belgian Instructor* reports thus on the growth of hemp:—'From personal observation, I have arrived at the opinion that hemp can only be beneficially grown in Ireland in the following manner: It should be sown after potatoes, the field being thoroughly cleansed while digging that root. The hemp crop can be followed by a flax crop, as practised in Belgium. The hemp should receive some artificial manure—such as guano, or rape-cake dust—at the sowing period, to create a quick stimulus to the young plant, the manure to be applied with the seed. The seed should not be sown either broadcast or in drills, but with the usual corn-sowing machine, and covered, crossways, with the roller; or, still better, ploughed in, in the same way as wheat, along with the artificial manure, so that the crop will be in drills of three to four inches apart. As only 140 plants, at the most, per square yard are required, and each pint contains 10,570 seeds, it follows that thirty-two quarts would be a sufficient quantity of seed per statute acre; but I would recommend an increase of one fourth of that quantity for the following reasons: Experience has shown me clearly, that, although the female plant is the most vigorous at the ripening period, the male plant will take the lead until it arrives in blossom; that the male forms about a fourth of the whole crop, and possess little fibre, and that of inferior quality, reaching maturity fully four weeks before the female. By pulling the whole crop at the ripening period of the female, the male plant becomes valueless. By taking a medium—that is, two weeks after the ripening of the male, and two weeks before that of the female—the valuable seed is sacrificed, and the straw steeps unevenly, with a mixed fibre of inferior quality. To obviate these evils, a very simple plan may be adopted. By sowing the crop in drills, as described above, a fourth of the plants can be easily removed; and as the mail takes the lead, by simply pulling the most advanced plants at the time the crop is six to twelve inches high, it will turn out an almost female crop, securing the greatest yield in both seed and fibre, without any after trouble in the treatment between the plants of each sex. The experiments have also convinced me of the possibility of taking off the seed by the ordinary thrashing machine, provided an even crop be obtained; and that the hemp straw can be scutched in the common flax scutching mill, by simply having the diameter of the beaters, to which the wipers are attached, enlarged, and the stock brought to an equal elevation, which can be done by excavating the ground where the stocks have to be used for hemp scutching, though attached to the same revolving shaft.' "

Sulphate of Lead as a Substitute for Oxide of Tin in Making Enamel.—Albert Ungerer, of Pforzheim, states that if sulphate of lead, which, as our readers know, is a substance produced as a secondary product in many manufactures, be added to flint glass, to the extent of about 25 per cent., a beautiful enamel glass will be obtained, which, although very heavy, becomes much more fluid on being melted than the tin enamel.—*Polytechnische Journal.*

AGRICULTURAL CAPACITIES OF TEXAS.

THE March number of *De Bow's Review* contains an account of progress in this state, which is truly remarkable:

"The following table shows the principal items of taxation, their value, etc., for each of the eight years, ending with 1853:

Years.	Land.		Negroes.			Horses and cattle.		Other property.	
	No. acres assessed.	Value.	No. ass'd.	Value.	Ad. valo.	No. assessed.	Value.	Money at interest, goods in store, &c.	Aggregate taxable property.
1846....	31,967,480	$17,776,101	31,099	$10,142,198	324	411,100	$2,929,372	$3,543,501	$34,391,175
1847....	30,440,210	17,326 994	39,251	12,174,593	310	448,971	3,392,784	4 663,134	37,562,505
1848....	32,160.184	20,777,412	40,610	13.398,470	323	581,251	4,174,475	5,461,666	43,812,537
1849....	32,890,887	20,874,641	43,534	14,658,837	337	631 649	5 419,015	5,847.516	46,241,589
1850....	32,640,400	21,807.670	49,197	17.776,500	361	750,352	5,222.270	6,675,[illegible]75	51,8[illegible]4,515
1851....	37.731.774	31,415,604	59,959	26.246 668	404	901,794	6.638,115	7,639 797	69.739.581
1852....	37.838,792	33,[illegible]16,772	68,775	28 628,990	415	1,020,842	7.977,999	11.030,423	80.754,094
1853....	39.175,858	39.259,412	78,713	35,946,473	456	1,164,463	10.217,499	13,784 530	99.155,[illegible]14

This is a most extraordinary result when we look back twenty years to the meeting at Niblo's Garden, where the Hon. Daniel Webster addressed a large meeting in relation to that then unknown region. The speculation in those lands, then set on foot by Messrs. Swartwout, Curtis, and others, filled the country with Texas land scrip, all of which, we believe, was considered ultimately valueless. Nevertheless, that great country, in spite of disrepute, bankruptcy, frauds, violence, war, and repudiation, was inoculated with the American element of progress, and we find her wealth tripled in eight years, and those lands which General Hamilton, in 1840, vainly sought to pledge for a loan in France, at $3 per acre, have risen, in eight years, from $55 to $100 per acre. The cattle have increased in number 700,000, but are assessed at the low rate of $7,78 per head, having apparently not increased in assessed value; at that rate, the aggregate value has risen $7,300,000 among a population of 154,431 white.

Texas is, beyond all comparison, the best grazing country in the United States. To a stock-raiser in the north, his herd are a dead expense for at least one-half of the year. Hay and grain must be accumulated for their sustenance, and stables, more or less expensive, must be prepared for their protection during the winter months. Not so in Texas. Men whose cattle number thousands of head, are at no great expense for feeding them. The only expense attending the raising of cattle in Texas is that of salting them occasionally to prevent their becoming too wild, and herding them during the season of branding, and during the prevalence of severe "northers." Nature, all-bountiful and propitious, spreads out upon the prairies her carpet of perennial greenness, and there they roam, lowing and feeding, fat and sleek. The increase of stock is very rapid, not less than thirty per cent. yearly. A cow and a calf will sell at from $8 to $15, good oxen from $30 to $60 a pair, and a whole herd together will average $5 a head. To a man who has but small means, there can be no more certain road to wealth than that of stock-raising in Texas. Before the lapse of ten years the increase alone would amount to five hundred head annually, if he had made his purchases judiciously at the commencement. Horses, mules, sheep, and swine, are all raised with equal facility. The average expense of fatting a hog till

it weighs from two to three hundred pounds is about two bushels of corn, all the rest being effected by means of the pecans, and other food, which the country produces spontaneously.

The number of slaves given in the census for 1850 was 58,161; number assessed in that year was 49,197; since when they have increased 70 per cent., with an increase of the price per head. Since 1846, it appears, under a supply of 47,000 slaves, the assessed value has advanced from $324 to $456 per head; money at interest, it appears, has increased $10,200,000, or three hundred per cent., and it may be borne in mind there are no *banks* in Texas.

Certainly such a State as that ought to do something towards meeting, in full, the obligations that she found takers for in the days of her adversity. If there were those whose hopes for Texas outlived the news of the Alamo, they may yet outlive the days of Texan dishonor."

LINES OF RAILROAD CONNECTING BOSTON AND NEW-YORK WITH THE WEST.

Commencing at *Boston*, and following the line of the Western Railroad of Massachusetts to Albany, thence by the New-York Central Road to Buffalo, thence by the Lake Shore Railroad to Cleveland, thence by the lines of railway passing by Bellefontaine to Indianapolis, and thence to Terre Haute, we shall have an aggregate of one thousand and thirty-four miles of railroad in actual operation, crowded with business through the entire distance.

If we begin at *New-York*, and pass over the Hudson River Railroad to Albany, and thence follow the line above described, we shall find a distance of nine hundred and seventy-eight miles of completed railroads; or if from *New-York*, we follow the New-York and Erie Railroad to Dunkirk, and there intercept the above described line, we shall find a distance of nine hundred and fifty-five miles of railroads in daily operation.

If we start from *Philadelphia*, and pass by the Pennsylvania Central Railroad to Pittsburg, and thence by the Ohio and Pennsylvania Railroad to its intersection at Crestline with the line from Cleveland to Indianapolis, we shall find a line of railroad eight hundred and eighteen miles in length to Terre Haute, in actual operation.

If we start from *Baltimore*, and go by the Baltimore and Ohio Railroad to Wheeling, and thence by the Central Ohio Railroad to Columbus, thence by the line to Xenia and the Indiana Central Railroad to Indianapolis, and thence to Terre Haute, we have a line of seven hundred and seventy miles now in actual operation.

If we start from *Cincinnati*, and proceed by the railroad *via* Lawrenceburg to Indianapolis, and thence to Terre Haute, we have a line of one hundred and eighty-two miles of railroad in operation.

Combining these different lines, and omitting such portions of them as are common to two or more of the lines above named, we shall find an aggregate of *two thousand nine hundred and ninety-one miles* of railroad now completed, and in daily and constant operation between Terre Haute and the cities of the East.

Of the lines not completed, but now under construction, the Wabash Valley Railroad will unite with our line at Paris, in Edgar County, one hundred

and fifty miles from Alton, and passing to the valley of the Wabash, will proceed by Lafayette, Logansport, and Fort Wayne, to Toledo, where it will unite with the navigation of Lake Erie, and form the shortest connection between St. Louis and the Lake that is practicable. It will be about two hundred and seventy miles in length, from Paris to Toledo, and will pass through the most important section of the State of Indiana.

At Toledo, it will unite with the Cleveland and Toledo Railroad, and secure, in the direction of Cleveland and thence to the East, the connections that will entitle it to be considered one of the great thoroughfares of the business between the East and West. Nearly five millions of dollars have already been expended upon this line, and nearly one-half of the whole will be in operation by July of the present year.

It will be remembered that the junction of the Missouri and Mississippi Rivers takes place opposite the city of Alton, and, consequently, the navigation of the Missouri is favorably carried on from this point.

I subjoin a recapitulation of the distances by Railroad, above referred to, for convenience of reference.

Boston to Terre Haute, 1,034 *miles.*	Miles.
Boston to Albany, by Western Railroad, &c.,	200
Albany to Buffalo, by New-York Central Railroad,	298
Buffalo to Cleveland, by Lake Shore Roads,	183
Cleveland to Indianapolis, by Bellefontaine Lines,	281
Indianapolis to Terre Haute,	72
Total,	1,034

New-York to Terre Haute, by New-York Central Railroad, 978 *miles.*	Miles.
New-York to Albany, by Hudson River Railroad,	144
Albany to Indianapolis, as above,	762
Indianapolis to Terre Haute,	72
Total,	978

New-York to Terre Haute, by New-York and Erie Railroad, 955 *miles.*	Miles.
New-York to Dunkirk,	460
Dunkirk to Cleveland,	142
Cleveland to Terre Haute,	353
Total,	955

Philadelphia to Terre Haute, 818 *miles.*	Miles.
Philadelphia to Pittsburgh, by Pennsylvania Central Railroad,	353
Pittsburgh to Crestline, by Pennsylvania and Ohio Railroad,	187
Crestline to Indianapolis, by Bellefontaine Lines,	206
Indianapolis to Terre Haute, by Terre Haute and Richmond Railroad,	72
Total,	818

Baltimore to Terre Haute, 775 *miles.*	Miles.
Baltimore to Wheeling, by Baltimore and Ohio Railroad,	380
Wheeling to Columbus, by Ohio Central Railroad,	141
Columbus to Indianapolis, by Indiana Central Railroad, &c.,	182
Indianapolis to Terre Haute,	72
Total,	775

Cincinnati to Terre Haute, 182 *miles.*

	Miles.
Cincinnati and Indianapolis Railroad,	110
Indianapolis to Terra Haute,	72
Total,	182

The above are the lines of railway completed and in operation, and include, of distinct lines, 2,991 miles.

LINES UNDER CONSTRUCTION.

	Miles.
Wabash Valley Railroad, Paris to Toledo,	270
Cleveland and Toledo Railroad, *via* Sandusky, completed,	107
Cleveland and Toledo Railroad, *via* Norwalk, completed,	112
Illinois Central Railroad, main line, completed,	454
Illinois Central Railroad, Chicago Branch,	173
Connecting lines in progress,	1,116

Which, added to the aggregate above, make a total of *four thousand, one hundred and seven miles* of railroads, connecting St. Louis with the Atlantic cities.

RAILWAYS IN RUSSIA.

The carriage allotted for my special use was about ten feet square; it was furnished with two sofas and chairs, a small card table, and two side tables. On the sofas I could have reclined at full length—a convenience very desirable, and generally denied us on English railways—both sofas and chairs had air cushions, and were very comfortable. I looked into several first and second class carriages, and they all appeared nicely fitted up, although not like the one assigned to me; the second class carriages had cushions superior to those of the first class on English railways, and afforded plenty of room to each individual, allowing of his sitting without cramping his knees upon those of the person opposite to him. We left Moscow at 11 o'clock precisely—Mr. Sherman, my servant, and myself, occupying this litte room to ourselves; our baggage was stowed away in another carriage. I was pleased to perceive that there was no unnecessary hurry in the railway movements such as those which annoy the English traveler; plenty of time was allowed at every station to the passengers to take their meals, and in each there was all that could be required in the way of refreshments. The time allowed for the train to pass from one station to another is carefully fixed for the driver, who dare not arrive a minute sooner or later; so that, in some cases, we had to go very slowly, in order not to arrive before the time. This, however, is not unpleasant, as people on the continent do not give away to that nervous hurry which fidgets us and shortens our lives. Who in England has time to look around him? Rich and poor seem to be urged along by an impetus which prevents their thinking of anything except their next appointment, and as soon as that is kept, their thoughts fly to the next.—*English Prisoners in Russia.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CHEMICAL EFFECTS OF CERTAIN FERTILIZERS ON THE POTATO.

BY PROF. J. L. CAMPBELL, OF WASHINGTON COLLEGE, VIRGINIA.

In the spring of 1852, I applied to a part of a small lot of potatoes a mixture of wood ashes, gypsum, and common salt, using them in the proportion of four bushels of recently leached ashes, one bushel of ground gypsum, and half a gallon of salt. The application was made soon after the tops began to make their appearance above the surface of the ground. The mixture was applied to a part only of the lot, while, in other respects, the whole was treated alike. That part to which the application was made, produced not only a more abundant crop than the other, but, also, potatoes of much superior quality.

This led me to try a similar treatment of the greater portion of my little crop in 1853. The fertilizing preparation was in this case varied, by using double the quantity of salt previously used. By way of further experiment, too, the mode of applying it was somewhat varied. To one part it was applied at the time of planting directly upon the tubers; to another part, after the tops appeared above ground. The result this year was more satisfactory, in the soundness, quantity, and flavor of the potatoes, than it had been the year before, although the season was far from being favorable. There was, however, no perceptible difference between those having the fertilizers applied at the time of planting, and those having them subsequently applied upon the surface of the ground.

Such was the influence of the ashes, plaster, and salt, that I resolved to subject to chemical examination specimens cultivated both with and without the use of these manures. This has been done in such a way as to give a fair comparison of results.

Two small plots of ground, alike in character and fertility, were prepared last spring (1854) for potatoes. The soil was broken up early, and exposed to the action of frost. At planting time—the latter part of April—it was stirred, and laid off in trenches four inches deep, and two-and-a-half feet apart. In the bottom of these the tubers were drilled, at the distance of six or eight inches apart. The trenches were then filled up with a mixture of broken straw and stable manure. Up to this point both portions of ground were treated precisely alike.

The mixture of ashes, gypsum, and salt, was now scattered along the trenches on the manure in one of the plots of ground, while it was entirely withheld from the other. The quantity applied was at the rate of about twelve bushels to the acre. The whole was then covered with the soil. The subsequent culture consisted in keeping the ground clear of weeds, and in drawing a little earth to the tops in the early part of their growth—the same mode of treatment being applied to both divisions. The resulting crop was about as four to one in favor of that portion to which the mineral fertilizers were applied.

It is deemed unnecessary to give further details as to mode of culture, results in quantity, etc., as the object in view was a chemical investigation. The conclusions reached by this investigation will, doubtless, possess some interest in the mind of the intelligent agriculturist, and will, I hope, lead directly to more extended and more accurate practical experiments.

Specimens of the tubers from both portions of ground have been examined:

1. *With respect to the relative quantities of solid, nutritious matter found in each; and,* 2. *With respect to the influence of the mineral fertilizer upon the relative proportions of some of the elements in the ashes.*

For the sake of brevity, let the specimen cultivated with the ashes, plaster, and salt, be designated by the letter A, and that cultivated with the organic manures alone by B.—The kind of potato planted is that known here as the *Long Red.*

The specimen, A, carefully cleaned, cut into thin slices, and dried at 212,° (F) lost 77.5 per centum of its weight, while B, treated in the same way, lost 82.2 per centum. Thus A was found to contain nearly 5 per cent. more of solid, nutritious matter; that is, of starch, gum, etc., which give the potato its value as an article of food.

The solid part of A, when thoroughly dried and burned, gave 4.15 per cent of ashes, while B, under like circumstances, gave 4 per cent.

When subjected to analysis, the ashes of the specimens, A and B, were found to vary considerably in the proportions of some of their elements. They were examined especially with respect to the relative quantities of *potassa, soda, sulphuric acid,* and chlorine, contained in each. It will be remembered that *wood ashes* afford, even after ordinary lixiviation, considerable quantities of *potassa,* together with several other valuable fertilizing substances, such as *lime, phosphoric acid,* etc. *Gypsum* is composed of *lime* and *sulphuric acid,* both of which are found in the ashes of the potato. *Common salt* (chloride of sodium) is an abundant source of *chlorine* and *sodium,* the metallic base of *soda.*

Without pretending to give any part of the process of analysis, I will simply sum up the results in a condensed form. The following table will give a comparative view of both specimens, together with similar results as given in Norton's Scientific Agriculture. The columns marked A and B give the results of an analysis of the two specimens under consideration. The third column gives the proportions of the same elements from Norton.

100 grains of Ashes gave	A.	B.	*Norton.*
Potassa, - - -	50.91	49.75	51.50
Soda, - - -	3.49	65	a trace
Sulphuric Acid, - -	9.60	6.27	7.10
Chlorine, - -	3.30	1.98	2.70
	67.30	58.65	61.30

From the relative qualities of nutritive matter found in the two specimens differently cultivated, we may infer, that the presence of the *inorganic* fertilizers rendered the growth of the *organic* part of the tubers more perfect, and thus improved both the quantity and quality of the crop.

We may also infer from the above table, that the inorganic part, or ashes of the potato, may be considerably modified in composition by an abundant supply of certain elements of fertility, not generally existing (except in limited quantities) in soils that have been long under cultivation.

It will be seen by reference to the table, that potassa constitutes about one-half of the weight of potato ashes; hence the value of wood-ashes as a manure for this crop. While soda does not seem to be essential to the mature growth of the tubers, it is taken up by them when present in the soil. I presume it is taken up chiefly as chloride of sodium; and, in this

form, doubtless, it does much to promote the healthful and vigorous growth of the plant.

Chlorine is always present in the potato, and, hence, may be regarded as one of the elements in the soil designed by the Creator to aid in giving it full maturity.

The *sulphuric acid* of plants is, doubtless, generally combined with some one or more bases forming salts; probably sulphates of lime and potassa may exist together in the same plant. The presence of gypsum, *in excess*, not only furnishes an abundance of sulphuric acid and lime, but serves, also, to "fix the ammonia" of the organic manure used, of the soil, or of the atmosphere. This may be regarded as a secondary function of gypsum.

Wood-ashes, too, may be regarded as doing more than simply providing a supply of potash. They contain a very appreciable quantity of soluble silica. This gives strength and a healthful growth to the stalks, and, hence, tends to prevent some diseases, having their origin near the surface of the ground, and often extending downward to the tubers. Ashes also furnish small portions of phosphates; but, as phosphoric acid is found in no inconsiderable quantity in the ashes of the potato, I would recommend the addition of bones, in some form, to the other fertilizers used, especially on soils that have been frequently planted with indian corn and wheat. Burnt bones are readily reduced to powder by beating or grinding; though they are more valuable, and their action more efficient, if dissolved in sulphuric acid.

The advantages of applying soluble fertilizers, in such a way that they will be gradually carried to the roots of the growing plant by the rain, are too obvious to require even a passing remark.

HORSE-SHOEING.

If to write anything worth reading, requires that one should be practically acquainted with the subject, and understand what the conditions of the case demand, then, what we write under this title may be passed over as worthless. We do not know what is the proper treatment of the case under our notice; and, what is still worse, is, we do not know of any who are much above us in this respect. Nevertheless, what we do know, we are inclined to state.

We know that horse-shoeing is a very important service, on which not only the value of the horse is often dependent, but even the life of his rider. We know, also, that skill in all the arts does not come by nature; that apprenticeship in all its essentials is absolutely indispensable in them. We also know that our town and village blacksmiths, to a very considerable extent, are practitioners in this department, without any especial training for it. They learned what they know of some *boss*, who was very popular in his own community, perhaps, for his general proficiency in the art which he practiced, but who acquired his theories, if nothing more, from some master, who, perhaps, commenced this work when he was ignorant of it as his apprentice; because he failed in some other employment, and had a *natural tact* for it; and so the list goes on—"an unbroken succession"—from one who never spent an hour in the proper investigation of the subject. Hence, we are not surprised to read that "American horses fail in the feet oftener than those of other countries."

In some of our cities, our pavements are disgraceful in the eyes o
sible horses. Broadway might very accurately be defined, "a street arranged so as to require of all horses the greatest possible effort to preserve their standing." We seldom walk to our place of business, less than a mile and a half, without seeing one or more instances of slipping; and often, when a complete fall is avoided, we notice many horses whose cramped motions resemble those of a smoothly-shod boy, who is taking his first lessons in walking on ice.

But as we pretend to no especial skill here, we give place to a writer in the *N. Y. Courier*, who seems to understand at least something on this subject, and "has had an experience of twenty years in the British cavalry," though in what capacity we are not informed, and whose suggestions may be useful to those who have some personal responsibility in reference to this subject. He writes as follows:

"Of winter or summer states of roadways, and the slipping, stumbling, and falling of horses, the writer cannot here more than observe that it is these which dictate how the hoofs should be prepared and the shoes adapted. The business of the farrier, as well of the hostler, should all be managed in direct reference to them. An animal requires, in all states of the streets and roads, foot-freedom and foothold; and, in slippery states, extra care must be taken that a good foothold is secured. All shoes and shoeing, however—and this fundamental rule should never be lost sight of—must be subject to the natural and elastic conditions of the foot, so as not in any manner to impede or injure these. In states of nature, and when galloping at liberty over all kinds of ground, soft and hard, rough and smooth, the horse has three sources of good and sufficient foothold. The first is the concave form of the under surface of the hoof; the second is the expansibility of the hoof, which opens at the heels and quarters, and spreads at the base, under the super-weight and momentum of motion; and the third is the consequent and very effective stay derived from the action of the wedge-like frog on the surface or ground.

Let any mechanic examine the structure of the horse's foot, and he would at once discover and pronounce it to be an organ whose construction and processes were admirable, and well adapted it to be at once an expansive as well as a protective covering for the motive and sensitive joints and tissues contained within. He would further see and add that, if in circumstances of an altered or domesticated state, an additional or artificial protection against tear or wear should be required, that this—whether of iron or aught else—must be so applied and adjusted as not to interfere with, or limit, the expansive properties of the hoof, on the penalty of fatal mischief.

Let us now inquire into facts. How are the shoes of horses—this additional protection—applied? Are their form and adjustments well and rightly suited to their end and purpose? No; for, first, the hoofs grow deep, dry, hard, and inelastic; second, the shoes promote this state, and further bind and debar expansion; third, instead of being concave to the ground, so as to correspond to the concave form of the under surface of the hoof, the form of the shoes are the reverse, and may be, therefore, likened to a skate, nailed on in a manner to fix the parts; fourth, the frog is squeezed and diminished, and is altogether disabled from usefully exercising its truly valuable functions.

In order to remedy one part of the evil,—slipping and falling—arising from such shoes and shoeing, recourse is had to toe-pieces and caulkings. These aggravate the general mischief; for already ill-adjusted bearings of the hoofs and shoes are straining the joints and ligaments, and this effect of high caulking greatly tends to increase, as will be visible, if we observe the

manner in which one caulking first takes the ground, and then how the animal's weight twists toward one on the other. Concussions and injuries to the foot, pasterns, and fetlocks, and wrenches of the hocks, are continual results. One kind of evil, substituted as the remedy for another, does not abate the first. It is only a superadded evil. From all these causes flow the almost universal prevalence of contracted, impaired, and unsound conditions of the feet of horses; the fore-feet in particular, which are more under the centre of weight and motion.

Toe-pieces should never be used. Properly formed shoes never require them. As a general rule, caulkings on the fore-shoes should seldom be resorted to. When icy states of the streets or roads seem to exact them, a low caulk on the outer heel of each shoe, only, should be used, and the web of the inner heel should be drawn narrow and thick, in proportion to the height of the caulk, so as to give an even and true bearing under the centre of the animal's weight. The same rule should apply to the under heel of the hind-shoes; but a low caulk on the outer heel of each shoe, behind, is always recommendable. The main and true defence, however, against toeing, tripping, and stumbling, is ever to be sought in shoes and shoeing, mechanically and physiologically adapted to preserve natural and healthy forms and conditions of the hoofs and feet."

THE POTATO CULTURE.

Various expedients have been tried, with more or less success, to prevent the potato-rot, but we have not been forward in devising or commending plans for selecting special soils, or using certain precautions, from the fact, that we have had but little confidence in their success. Sometimes judicious management has lessened the rate or extent of decay; but when a crop is once infected, or in that condition which is so called, alleviation is the only thing, in our judgment, that can be done. It is like one far gone in consumption. The philosophy which brought us to this result, be it true or false, is as follows:

The tuber is not the organ on which vegetation seems to rely, as her main dependence, in sustaining her succession of growths, but is only a duplicate process, which is capable, to a *limited extent*, of increasing the production of the species. At the same time, in its native condition, the plant never forgets its seeds. These are always the true reliance, and, we believe, the only true reliance for the propagation of plants.

Analogy is also with us in this doctrine. How do we secure a permanent succession of tuberose plants for our flower-gardens? We always rely on the product of seeds. We pot and repot tubers, but we always expect them to deteriorate, and have occasion nearly, or quite every year, to resort to new importations, or to the product of our own sowing. These importations, if honestly conducted, are the products of the seed, and not of the division of the tubers. We do not know why a greater permanency should be expected of the tubers of a potato than of a hyacinth. We have carefully watched this matter, not desiring to express an opinion too hastily, though we give it now as an opinion only, while it seems to us based on sound principles in philosophy.

If we are right, the true method for every farmer to adopt is to prepare his grounds in the best possible manner, plant the best potatoes he can procure, and give them his best attention, while he secures a good growth, and ripens the seeds in the best manner, planting them in a soil equally well prepared for them, and waits for his crop of seedlings. This should be done, to some extent, every year.

INDIAN CORN—ZEA MAYS.

We regard this crop not only as the most valuable raised in this country, on account of its immense amount, but as the most important to the producer. It grows in various temperatures, varying from "40° south latitude to 45° north latitude," and will flourish even at the elevation of several thousand feet above the sea. New species are occasionally introduced, which bear greater degrees of cold than those hitherto cultivated. This, probably, is dependent, at least to a great extent, upon its becoming acclimated, or to adapting itself to the climate in which it is raised.

The entire product of corn in the United States, by the census of 1850, as quoted on p. 326, of this volume, was 592,078,804 bushels. De Bow estimates this as amounting, in value, to $296,035,552, as seen on p. 327.

The chemical composition of corn varies with different species and different latitudes. Sweet corn contains more of the phosphates. Southern and "Oregon" corn contains more starch than Northern; Rice and Pop corn have it in the least proportion. Rice corn contains the greatest quantity of oil. Pop corn contains its oil in small cells, and, by heat, this oil is decomposed, and assumes a gaseous form, by which process the cells are burst, and the result, when produced suddenly, turns the grain completely inside out.

The Tuscarora corn is deficient in oil, and, hence, is not so useful in fattening animals, though it may make excellent bread. All corn contains gluten in so limited a quantity, that it does not "rise" like the flour of wheat, on the application of yeast. Yellow corn has $\frac{1}{20}$ less bran than white corn; it is heavier, also.

MODE OF CULTURE.

Good crops of corn can be grown in almost every kind of soil, by proper cultivation. But, judging from the rich crops produced in some parts of Ohio, that best suited to the growth of corn is an alluvial deposit, rich in vegetable matter, not stinted in its amount of moisture. It should be deep and mellow, allowing the roots to extend themselves freely in all directions.

Corn will not vegetate at a low temperature, and, hence, the condition of the season can not be overlooked by the judicious farmer. Some seeds will remain uninjured, if they do not actually vegetate, in a cold soil. Corn requires a temperature of at least 50° or 55°. If reduced below this, there is a tendency to decay.

The ground being well ploughed and pulverized, the hills should be prepared at a distance of three or three and a half feet apart. The manure may be broadcast, or placed on the hills. An excellent manure for the hill is made by mixing one-fifth of hen manure, one-fifth of plaster, and three-fifths of ashes, of which, after it is well mingled, and has been left to ferment, a spoonful may be thrown into each hill. If manure is used broadcast, a

spoonful of gypsum in each hill, in most soils, is found very profitable. If barn-yard manure is not at hand, the artificial preparations to which we have so often referred, should be put in requisition. Decayed vegetable matter is most desirable, and, after this, the various bone mixtures. Soaking the seed before planting hastens its germination. Covering the seed with tar, and then, for convenience in planting, rolling it in ashes or lime, will preserve it from the attacks of crows or insects.

When the corn appears above ground, an occasional sprinkling of ashes is useful, which may be applied at the hoeing.

Hilling corn is not recommended. All such elevations are unfavorable to the influence of rains. Use a hoe, or a cultivator, or both, keeping down all weeds, and making the soil soft and porous.

CORN FOR FODDER.

Corn is often planted for use as feed; and we doubt not that farmers would find it for their interest to make a more free use of this excellent feed. Few products of the farm are more nutritious or more convenient. A single acre will ordinarily produce five or six tons, and will keep four cows for three months. But a much greater result has been sometimes obtained. In 1845, in Massachusetts, over thirty-one tons of green stalks were grown upon an acre. The product of two acres and thirty-two rods was estimated as equivalent to fifteen tons of the best of hay. On this lot, ten bushels of corn were sown. When it is to be used in this way, it should be sown in drills, two and a half or three feet apart, sowing from three to four bushels to the acre. After sowing, the ground should be harrowed. The Stowell & West corn should be used. Good feed may thus be obtained by the end of June. The stalks should be suffered to wilt before feeding. If they are to be dried, or kept for winter, they should be cut in the tassel, and a little sprinkling of salt is recommended. This tends to prevent them from moulding, and is also agreeable to the cattle.

The stalks may be prepared by various processes. Sometimes they are cut before the corn is ripe. This is for the benefit of the feed, and it saves the cost of the corn. Sometimes they are left till after the corn is gathered, when they are cut up from the roots. Which is best, on the whole, is yet a question. We are disposed to think that, by the use of some well-arranged cutters, the entire stalk may be consumed for feed. Every part of it is highly nutritious, and we see not why the whole may not be so prepared, as to be eagerly eaten by different kinds of stock.

FOOT-ROT.—The *Country Gentleman* states that the following remedy for the foot-rot in sheep has been used with great success by H. Howland, of Aurora, Cayuga county, N. Y., for the last thirty years:

"Mix flour of sulphur with the salt given to the sheep, in a proportion just sufficient to discolor perceptibly the salt, or about one-eighth part. Sulphur may be had at a wholesale price at a cost of not over two cents. Where local applications are necessary, we should much prefer a solution of chloride of lime to any other application."

UNITED STATES AGRICULTURAL SOCIETY.

The third annual session of this society commenced February 21st, 1855, in the "East Room" of the Smithsonian Institution. Twenty-six States were represented by accredited delegates from state and county societies, and there was also a large number of individual members of the society.

The Hon. M. P. Wilder, of Mass., President of the Society, on taking the chair, delivered a pertinent address, in which he recapitulated the operations of the society during the past year, including the cattle show at Springfield, Ohio. The address was received with applause, and has been printed for distribution in pamphlet form.

On motion of Mr. King, of New-York, a committee of one from each state represented was chosen by the President, to nominate a board of officers for the ensuing year.

A letter was read from Col. Selden, resigning his office as treasurer, and, accompanied by securities for the funds of the society deposited in the bank, was referred to Messrs. Wager, of New-York, Calvert of Maryland, and Worthington, of Ohio. They subsequently reported, complimenting Col. Selden for his integrity, and expressing confidence that the funds are secure.

Resolutions were offered by Messrs. Holcomb, of Delaware, and Kemmel, of Maryland, which were sustained by Messrs. Calvert, Peck, and Kennedy, of Maryland, King, of New-York, and Jones, of Delaware, and then laid on the table for future discussion.

Messrs. Wager, of New-York, Kennedy, of Pennsylvania, Proctor, of Massachusetts, Steadman, of Ohio, and Jones, of Delaware, were appointed a committee to receive and report on amendments to the constitution.

Mr. Calvert, of Maryland, offered a resolution recommending political action on the part of agriculturists, and supported it by able remarks.

He was followed by Messrs. French, of New-Hampshire, Dyer, of Conn., and Kennedy of Pennsylvania, and the resolution was laid on the table for future discussion.

Mr. Jones, of Delaware, presented a memorial, showing the effect of legislation upon agriculture, and embracing a mass of historical facts.

After having been read, it was, on motion of Mr. King, of New-York, placed on the files of the society.

Mr. Clenson, of Maryland, introduced a resolution recommending agricultural education.

An informal discussion of the potato rot, deep ploughing, and other matters of great agricultural interest, followed, in which a large number of gentlemen participated. Many facts of importance were elicited, as gentlemen from various sections related their "experience," and the debate was continued until four o'clock.

In the evening, the Society were favored by a lecture from their Vice-President from Virginia, the venerable George Washington Parke Custis. His eloquent narrative of the illustrious "Farmer of Mount Vernon" was listened to with marked attention, by a large audience, and was warmly applauded.

After the lecture, a large number of ladies and gentlemen were introduced by the President to the orator.

After the lecture, the officers and committees were unexpectedly entertained at the National Hotel, by Col. C. B. Calvert, the proprietor of "Riversdale." A sumptuous repast graced the festive board, and the festivities were prolonged until a late hour.

SECOND DAY.

This morning the Society met at ten o'clock, and, after the report of Mr. King, of New-York, chairman of the nominating committee, elected the following

OFFICERS FOR 1855.

PRESIDENT.

MARSHALL P. WILDER, of Massachusetts.

VICE-PRESIDENTS.

John D. Lang, Maine.,
H. F. French, N. H.,
Fred. Holbrook, Vt.,
B. V. French, Mass.,
Jos. J. Cooke, Rhode Island,
John T. Andrew, Conn.,
Henry Wager, New-York,
Isaac Cornell, New-Jersey,
Isaac Newton, Pa.,
C. H. Holcomb, Delaware,
H. G. S. Key, Md.,
G. W. P. Custis, Va.,
Henry K. Burgwyn, N. C.,
James Hopkinson, S. C.,
D. A. Reese, Ga.,
A. P. Hatch, Ala.,
A. G. Brown, Miss.,
J. D. B. DeBow, La.,
Gen. Whitfield, Kansas,
J. T. Worthington, Ohio,
B. Gratz, Ky.,
M. P. Gentry, Tenn.,
Jos. Orr, Ind.,
J. A. Kinnicutt, Ill.,
Thos. Allen, Mo.,
T. B. Flournoy, Ark.,
J. C. Holmes, Mich.,
Jackson Morton, Fla.,
T. G. Rusk, Texas,
J. W. Grimes, Iowa,
B. C. Eastham, Wis.,
J. M. Horner, Cal.,
Jos. H. Bradley, D. C,
S. M. Baird, New-Mexico,
H. H. Sibley, Minn.,
Joseph Lane, Oregon,
J. L. Hayes, Utah,
Mr. Gliddings, Nebraska.

EXECUTIVE COMMITTE.

John A. King, New-York,
C. B. Calvert, Md.,
A. L. Elwyn, Penn.,
J. Wentworth, Ill.,
B. Perley Poore, Mass.,
A. Watts, Ohio.,
John Jones, Del.

SECRETARY.

WILLIAM S. KING, Boston, Massachusetts.

TREASURER.

B. B. FRENCH, Washington, D. C.

On a report of the Executive Committee, Dr. Elwin, of Pennsylvania, Henry Wager, of New-York, Dr. W. T. G. Morton, of Massachusetts, Col. Anthony Kimmel, of Md., and Chas. L. Flint, of Massachusetts, were appointed delegates to attend the coming Industrial Exhibition at Paris.

After the election, the discussion upon the resolution offered by Mr. C. P. Holcomb, of Delaware, on the "Reciprocity Treaty" as injurious to the agricultural interests of the Republic, took place. Messrs. Holcomb, Peck, King, and Jones participated in the discussion.

This evening the Hon G. P. Marsh lectured on "Notices of the Rural Economy of Continental Europe."

THIRD DAY.

After the election yesterday, the Society discussed a resolution offered the day previous by Mr. C. B. Holcomb, of Delaware, denouncing the "Reciprocity Treaty" as injurious to the agricultural interests of the public, Messrs. Holcomb, Peck, King, Waters, Elwyn, Kennedy, Steadman, Cowley, and

other gentlemen participating. The resolution, as finally amended and passed, reads:

Resolved, That we object to the doctrine of free trade for agriculture and protection for other interests.

Col. Calvert, of Maryland, offered the following preamble and resolutions, which he supported in an able and earnest manner, deprecating all applications to Congress, and urging action on the part of agriculturists, as calculated to *command* success.

The resolutions, after having been discussed by Messrs. Kennedy, of Penn., Jones, of Delaware, and King, of New-York, were carried:

Whereas, The prosperity of a country is in proportion to the improvement of its agriculture, therefore,

Resolved, That agriculture should be the first interest considered in legislating for the general welfare, and that such legislation should be had as will foster and protect this interest, which is paramount to all others.

Resolved, That the time has arrived for the agriculturists of the whole country to meet in convention, and determine for themselves what legislation is necessary for their protection.

Resolved, That such a convention, to be composed of delegates from each State of the Union, be earnestly recommended by this society, in order that an agricultural platform may be established, which will meet the views of, and be sustained by the whole body of agriculturists as a profession.

Mr. Wagner, of New-York, submitted a report on the proposed amendments to the constitution, which was discussed by Messrs. Fay and Waters, of Massachusetts, Cooke, of Rhode Island, King, of New-York, Hamilton, of New-Jersey, Calvert, of Maryland, and Worthington, of Ohio.

The constitution was so amended as to have the payment of ten dollars constitute life-membership, and to change the time for holding the annual meeting to the second Wednesday of January.

Various reports were read; among them, one on the *Chess in Wheat*, from the Smithsonian Institute; on *Agricultural History*, by B. P. Poore; on *Mr. Glover's Collection*, by Mr. Peck; and on *Western Fruits*, by Dr. Warden.

Mr. Peck, of Maryland, reported that the committee appointed to urge upon Congress the purchase of Mr. Glover's collection of modelled fruits, had had an interview with the proper committee of Congress, and received assurances that the matter would receive their attention.

A communication from Professor Henry was read, detailing experiments on the culture of the "Oregon pea," made under the direction of the Smithsonian Institution, at the request of the society. The results at Savannah proved it worthless for that region.

A paper on "Alderney Cattle," by Dr. W. J. G. Morton, was read and referred. Also, a paper on the "Potato Oat," from New-York.

Dr. Warden, of Cincinnati, exhibited over thirty different varieties of Western apples, which he descanted upon with his wonted accuracy.

The invitation was received and accepted inviting the Society to visit the Metropolitan Mechanics' Institute to-day at eleven o'clock. Invitations to the office of the Coast Survey and the agriculture room at the Patent Office, were also accepted.

After some remarks by Mr. Custis, giving his experience in growing wheat in Virginia, the Society adjourned until seven o'clock, when the Hon. G. P.

Marsh had been invited to address them on the *Rural Economy of Continental Europe.*

The lecture was listened to with great interest, embodying, as it did, a great amount of original information, and its publication will constitute a valuable addition to agricultural literature.

Dr. Warden followed, with an eloquent lecture on hedges, replete with practical information.

FRIDAY MORNING, MARCH 2.

The Society met at ten o'clock, and passed an hour in familiar conversation on agricultural subjects.

After a discussion on the appointment of Commissioners to the Industrial Exhibition at Paris, the matter was referred to the Executive Committee.

On motion of Mr. Poore, of Massachusetts, it was unanimously.

Resolved, That the thanks of the United States Agricultural Society be presented to the Regents of the Smithsonian Institution, for the facilities afforded in holding this session. The utility of this Institution, in thus serving as a nucleus, around which all useful associations can rally, at the capital of our Republic, shows the wisdom of the course pursued by the present Regents.

Col. Kimmel, of Maryland, read a curious extract from the Maryland Gazette, of September 8th, 1784, showing that "cattle shows" were established at Baltimore in that year.

On motion of Mr. Waters, of Massachusetts, it was unanimously

Resolved, That the thanks of this Society be proffered to Hon. George P. Marsh, for the very beautifully written and exceedingly interesting lecture he was so good as to present to us last evening, and that Professor Henry be requested to wait on him and request a copy for publication.

On motion of Mr. Calvert of Maryland, it was unanimously

Resolved, That the thanks of this Society be presented to Dr. Warden, for his interesting lecture on the cultivation of hedges, and that he be requested to present a copy of the same for publication in the transactions of the Society.

At eleven o'clock, in accordance with their acceptance of the invitation, the Society adjourned to visit the exhibition of the "Metropolitan Mechanics' Institute."

After visiting the Exhibition yesterday, the Society returned to the "East Room," and, on motion of Mr. King, of New York, it was

Resolved, That the thanks of the Society be presented to the officers of the Metropolitan Mechanics' Institute, for their polite invitation to attend their exhibition, which they have visited and examined with great pleasure.

After some debate, in which a strong desire for concerted action on the part of American Agriculturists was manifested, it was, on motion of Col. Calvert, of Maryland,

Resolved, That the first Friday after the next annual meeting of this Society, be fixed for the assembling of the Agricultural Convention, and that the press be requested to urge the importance of the subject.

Resolutions were passed complimenting the agricultural press, and urging its conductors to consider political economy, and urge united action on such matters connected with it as their judgment may suggest.

On motion of Mr. Taylor, it was

Resolved, That the thanks of the National Agricultural Society be tendered to the Hon. Mr. Morton, of the United States Senate, for his able report upon the subject of an Agricultural Department.

Resolutions were passed complimentary to President Wilder; to the Regents of the Smithsonian Institution; to Lieutenant Maury, (for an invitation to visit the Observatory;) to Mr. King, the Secretary of the Society; and to Mr. Poore, of the executive committee.

Adjourning, after three days' session, in which agriculturists from twenty-six States participated with great harmony of feeling, the members of the Society felt encouraged by this renewed and increased manifestation of the *great interest* of the Republic to assert its position.

In the evening many of the officers and members called upon Mr. Clayton, to thank him for his speech of the previous evening.

THE SPIDER.

Why hate and shudder at spiders? Because they entangle flies and kill them? That should entitle them to our gratitude, for flies, being troublesome and injurious to man, any other insect that destroys them ought to be considered our ally, and taken into friendship. Are they not beautiful? The other day we observed one in the field. He was larger than a double-eagle and as bright and yellow, having colors more striking, indeed, because harmoniously variegated.

Few ladies could outvie him in personal ornaments, which, in his case, were not of recent purchase, but came to him by inheritance in the line of an ancient family. He had constructed one of his wonderful palaces of regular dimensions and great size; but, either seeing, as the New-York architects sometimes fail to do, that its foundations were insecure, or else disliking the neighborhood, as nice people do rum-holes, blacksmith's and currier's shops, French boarding-houses and American piggeries—for these, or some other good reasons, he made up his mind to remove his residence.

Now, as he had been at immense expense in building his capacious house, like the Crystal Palace proprietors of New-York, and out of his own bowels too, which they did not—for speculators and brokers are not supposed to have any, purses being a complete substitute—having been at so much cost, he did not like to go away and leave his domicil behind him. For his stock of materials for such structures is limited, as well as the funds of the operators in the Fancies. Nature, it is said, only supplies the spider family with a certain quantity at first, which, if they are extravagant in spending, they will have afterwards to make up by *knitting*, Schuylerizing or stealing—the difference between which methods, we can not tarry to record, and might not be able to do so, was ever so much time allowed us. In short, our spider resolved, as the palace proprietors, who may have taken the hint from him, are said to have determined on—he resolved to take his splendid dwelling down.

So one morning he began in earnest to pull down, and, as far as we could judge, at the point where he had ended in putting it up; that is, the last timbers he had placed in the building were the first to be removed. Patiently and carefully he worked, taking off filament by filament of those long beams and braces, which seemed single to the naked eye, but yet were dou-

bled and trebled and quadrupled to afford sufficient strength for so large a work. For this creature, it must be observed, has discovered no iron or other new material to weave into his productions, but is obliged to labor with just the same raw material as when he spun his web upon the grape vines of Mrs. Eve. So if he wants augmented strength in any portion of his work, he can only attain it by putting several timbers together.

By degrees, we could see, as he wrought, the main pillars and string-pieces lessening in size, and at length disappearing one by one, till finally, the whole habitation was invisible. What had become of it? We kept a sharp look-out at this juncture, for it was evidently the crisis of the enterprise. At last we saw the spider hoist a pack upon his back in the shape of a ball, and commence his journey. It was his house, which he was thus transporting to erect in a more favorable locality. Like a snail, he was thus carrying it upon his back, though, unlike that animal, he had the rough stock of another in his belly, should this tenement of his be dissolved by the hurricane, flood, or fire. The beautiful, industrious and provident creature ran along as nimble as Æneas, with his father, Anchises, on his shoulders, though under the burden of all his worldly goods. He made for a large tree, where, notwithstanding all our vigilance, he forever disappeared. We sent after him a sincere wish, that he might obtain an eligible lot *up-town*, whither he was going, on easy terms.—*Newark Advertiser.*

THE BAREFOOTED PRINTER-BOY.

The Pittsburgh *Morning Ariel*, under this caption, gives a short story of a distinguished citizen of Pennsylvania, as follows:

Some thirty years ago, a barefooted boy floated down the Susquehannah river on an humble raft, and arrived at Harrisburg, Pa. He came from the North, and belonged to a large family, with all his worldly goods tied up in a little pocket-handkerchief. He sought and obtained employment in a printing office as an apprentice. From an apprentice to a journeyman, from a journeyman to a reporter, then to an editor, the barefooted printer boy worked his way against obstacles which the struggling poor only know. The persevering follower in Franklin's steps began to realize the fruits of his patient toil and privation. The young aspirant became Printer to the State, and by frugal management was soon enabled to accomplish the object dearest to his heart—the establishment of his mother in a home above want—in the possession of every comfort she could desire.

His brothers were next his care, and like Napoleon, he had a strong arm with which to aid them—an indomitable perseverance that nothing could long sucessfully obstruct. In a few years, they too, with his sisters, were independent of the world; the once barefooted printer boy was in possession of affluence, surrounded by a young and affectionate family. He did not stop here. He was the friend of the friendless, the patron of merit, and the encourager of industry. He rose in honor and in office, until the poor barefooted boy, who entered a printing office in Harrisburgh, hungry and weary, laid down his little bundle on a pile of wet paper and asked to become a printer's apprentice, was elected Senator in Congress! That man is Simon Cameron, of Pennsylvania.

SHEEP AND WOOL.

THE annexed table, showing the number of sheep and pounds of wool produced in each of the States and Territories of the Union, according to the Census of 1850, has been published in many of the papers. We have added, in another column, at the right hand, the average yield of a sheep in pounds and hundreths:

States.	Sheep.	Lbs. Wool.	Av.
Maine,	440,953	1,362,986	3,09
New-Hampshire,	384,656	1,108,476	2,88
Vermont,	919,992	3,410,993	3,70
Massachusetts,	188,651	585,136	3,10
Rhode Island,	44,296	129,692	2,92
Connecticut,	174,181	497,454	2,85
New-York,	3,454,241	10,070,301	2,91
New-Jersey,	160,488	375,386	2,33
Pennsylvania,	1,822,356	4,481,570	2,45
Delaware,	27,503	57,768	2,10
Maryland,	177,902	480,226	2,69
Dist. of Columbia,	150	525	2,28
Virginia,	1,311,004	2,860,765	1,63
North Carolina,	595,249	970,738	1,76
South Carolina,	281,754	487,223	1,76
Georgia,	560,435	990,019	0,99
Florida,	23,311	23,247	1,76
Alabama,	371,800	659,118	1,83
Mississippi,	304,929	559,619	0,99
Louisiana,	110,333	109,897	1,45
Texas,	90,098	131,373	2,00
Arkansas,	91,256	182,595	1,68
Tennessee,	811,537	1,363,378	1,68
Kentucky,	1,070,303	2,283,685	2,13
Ohio,	3,937,086	10,111,288	2,56
Michigan,	746,435	2,043,283	2,73
Indiana,	1,122,484	2,610,287	2,32
Illinois,	894,043	2,150,113	2,53
Missouri,	756,309	1,615,860	2,28
Iowa,	149,960	373,898	2,49
Wisconsin,	124,893	253,963	1,02
California,	17,574	5,520	0,31
Minnesota Territory,	80	85	1,00
Oregon Territory,	15,382	28,686	1,27
Utah Territory,	3,262	9,222	2,82
New-Mexico,	377,271	30,901	0,08
	21,571,306	52,417,287	2,42

It appears that the average is higher, by six-tenths of a pound, in Vermont, than in any other State. Massachusetts comes next, and then Maine. These are the only States where it exceeds three pounds. In New-Mexico and California, probably, the sheep are raised for mutton and peltry, and few

of them are sheared; for though we find a very regular diminution in the weight of fleeces as we proceed southward, it is not credible that fleeces actually sheared, should average only about five ounces in California, and only about an ounce and a quarter in New-Mexico.

The weight of fleeces in Vermont is not owing wholly to the latitude or temperature; for if it were, New-Hampshire and Maine ought to yield heavier fleeces still. It is, doubtless, in part, caused by the quality of the pasturage, air, and water, of the Green Mountain range; an advantage in which Massachusetts partakes. Another, and a principal cause is, the superiority of the breeds raised here. Almost all the sheep there are descended from the best flocks in Spain; and it has been long since ascertained that, with decent treatment, they do not deteriorate in Vermont. Not improbably, most parts of the Alleghany range may be found nearly or quite as well adapted to the same breeds.

The fleeces in Vermont are very nearly 20 per cent. heavier than those in any other State, and 52 per cent. heavier than the average of the whole United States. The profit of wool-growing, compared with lighter fleeces of equal fineness, is about in the same proportion; for the rearing and support of a poor sheep is as costly as of a good one. But, besides this, the fleeces are much finer than the average of the whole country, and bring a higher price per pound. It is plain, therefore, why the Vermont farmers go into the business so much more generally and extensively than those of any other State. It is plain, too, what farmers of other States must do, if they would reap the same profits from this business.

There are towns in New-Hampshire, where sheep of the same breeds yield the same profits; and so in some other States. It is probable, however, that in this staple the Northern States will always retain some advantage over the Southern, and the mountains over the plains.—*Boston Traveller.*

AGRICULTURAL SOCIETIES AND EDUCATION IN TENNESSEE.

In an address delivered by Governor A. V. Brown, before the "Agricultural College and Mechanics' Institute," established by the State, for the improvement of that people, the following passage occurs:

"In no portion of the State would the results of that success be more striking and gratifying than in East Tennessee. For more than half a century you have been mountain-bound, and consequently excluded, save at vast expense, from the great market places of the world. Deprived by the fiat of nature of the usual stimulus to action, you have put forth no great agricultural or mechanical exertion. Your houses were not promptly and neatly repaired; your orchards were left unpruned and neglected; your best grass and meadow-lands were unreclaimed; your fields were cultivated with a slovenly indifference, both as it regards durability and production. Indeed, the whole aspect of your country was that of a dissatisfied and desponding people, ready to seize the first opportunity to sell out and be off to some new and more favored land. But now how changed the scene! The genius of internal improvement has waved his magic wand over you, and house, and field, and orchard, all the splendid exhibitions of this day's fair, proclaim you a contented, happy, and prosperous people. The traveler pauses and tells

you in vain of the rich prairies of Texas, or the deep alluvion of the Arkansas. Even his gorgeous description of the diamond-studded and gold-glittering California can extort from you nothing more than the reply, 'East Tennessee is good enough for me.' And so it is, my countrymen. After years of travel and observation, I cordially endorse the sentiment, that East Tennessee *is* good enough for you—good enough for any body. Where, upon this continent, can you gaze upon a more varied and lovely landscape than now spreads out before you! Hill and dale, forest and field, torrents gushing from the mountain side, and streamlets gently flowing through valleys fragrant with flowers of perpetual bloom! Further off in the distance, we behold mountains in which lie imbedded, in close proximity, the largest supply of coal and iron ore that the whole Appalachian chain can boast. In the opposite direction, but in full view, lies another range of mountains, from whose bosom are daily borne inexhaustible treasures of copper, and other valuable minerals. Between these mountains lie a succession of luxuriant valleys, irrigated by streams of unrivalled purity, and capable of sustaining in elegance and plenty tenfold their present population. Into these valleys the iron horse is already making his resistless way, and waking to his fiery tread the slumbering echoes of six thousand years. When to these mere geographical advantages we add the charms and attractions of a population of whom it may be well said, without poetic license,

'Where Man is brave, and Women true,
And free as mountain air,'

who would exchange his own native or adopted East Tennessee for any other land on the globe!"

THE GREATEST GRAIN PORT IN THE WORLD.

THE *Democratic Press*, printed in Chicago, claims that that city is the greatest grain port in the world, and proceeds to give the evidence which supports such a claim. The exports from European parts are given at an average of several years:

"Those of St. Louis for the year 1853, those for Chicago and Milwaukie for the current year, and those for New-York are, for the past eleven months, of the same year. With these explanations, it invites attention to the following table:

	Wheat, bush.	In. Corn, bush.	Oats, Rye, and Barley.	Total, bush.
Odessa,	5,600,000		1,400,000	7,040,000
Galatz and Ibrelia,	2,400,000	5,600,000	320,000	8,320,000
Dantzig,	6,080,000		1,328,000	4,405,000
St. Petersburg,		all kinds.		7,290,000
Archangel,		"		2,528,000
Riga,		"		4,000,000
St. Louis,	3,082,000	918,384	1,081,078	5,081,168
Milwaukie,	2,723,574	181,937	841,630	3,747,161
New-York,	5,802,452	3,627,883		9,430,335
Chicago,	2,996,924	6,745,588	4,834,216	13,786,727

By comparing the exports of the different places mentioned in the above

table," says the *Press*, "it will be seen that the grain exports of Chicago exceeded those of New-York by 4,296,293 bushels; those of St. Louis by more than two hundred and fifty per cent. Turning to the great granaries of Europe, Chicago nearly doubles St. Petersburg, the largest, and exceeds Galatz and Ibrelia combined 5,406,727 bushels.

Twenty years ago, Chicago, as well as most of the country from whence she now draws her immense supplies of breadstuffs, imported both flour and wheat for home consumption; now, she is the largest primary grain depot in the world, and she leads all other ports in the world, also, in the quantity and quality of her beef exports! We say the largest primary grain depot in the world, because it can not be denied that New-York, Liverpool, and some other great commercial centres, receive more breadstuffs than Chicago does in the course of the year, but none of them will compare with her, as we have shown above, in the amount collected from the hands of the producers.

What a practical illustration the above facts afford as to the wonderful, the scarcely credible, progress of the west—what an index it furnishes to the fertility of her soil, and to the industrious and enterprising character of our people—what a prophecy of the destiny that awaits her, when every foot of her long stretches of prairie, and her rich valleys, shall have been reduced to a thoroughly scientific tillage!"

POST OAK GLADE LAND.

A farmer in Texas wishes to know "whether or not there is any method of reclaiming what we call 'Post Oak Glade,' which is a wet land of whitish or ashy color, most of the growth being Post Oak, with a few scattering Pines." He further says: "Such lands are apt to bake after heavy rains." A writer replies (in the *Southern Cultivator*) as follows: "I take it, this quality of land is better adapted to cotton than any other crop. I suppose it has too many silicates already without the use of lime.

Will 'A Subscriber' try ten acres on my plan? It will cost him nothing. Bed up the land in the spring, five inches deep, and that is very deep, (though I do not suppose he will think it deep until he puts the rule to it,) elevating his bed as high as a "dagon" plow of this depth will do; plant on the top of the bed, covering shallow. In this country, I would not plant his land before the first of May; with him, I advise him to plant at *least* one month after other planters. In cultivation, never go more than one and a half inches below the surface, and, in the latter part of cultivation, below one inch from the surface; cultivate either with a cultivator or with a sweep, cutting as deep at the outside of the wings as the point.

I am mistaken, if 'A Subscriber' will justly pursue this plan, if he does not gather from 1000 to 3000 pounds per acre. I am also mistaken, from his description of his 'Post Oak Glade Land in Texas,' if it is not the very best *cotton* land in Texas. If I am right in the character of his land, it is a cold land, one on which, by ordinary culture, a good stand of cotton can not be obtained. 'A Subscriber' must not plant this land until hot weather has set in, and then only by elevating the plant above the level, and as far above as he can, with five inches depth of bedding."

BOG MEADOWS RECLAIMED.

The following account of a reclaimed bog describes one of the most successful experiments we remember to have noticed. We find it in the Transactions of the Middlesex County Society, (Ms.,) in the statement of Mr. Asa G. Sheldon, of Wilmington, who is one of the enterprising farmers in that region. Mr. Sheldon's statement is as follows:

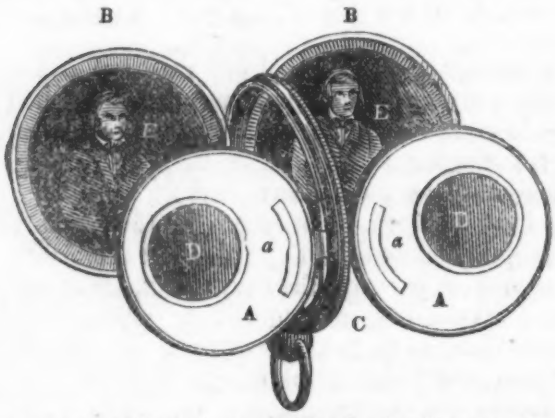
"The swamp land I offered for premium, in 1843, was blueberry swamp, with some few maples and white pine; value not more than ten dollars per acre. I first dug a ditch through the centre of it, about forty rods in length, which cost sixty cents per rod, making twenty dollars. Then I cut off the wood and brush, which barely paid for cutting. In the fall, the manure was taken from the slaughter-yard and barn-cellar, teamed to a side-hill near the swamp, mixed one load of strong manure with three loads of blue clayey gravel. This was done in September. In the winter, when the swamp was frozen, this was teamed on, tipped up in loads, and then covered with sand. In April, 1844, it was all overhauled. In May, I commenced digging over the swamp, and planting potatoes, putting a small shovel full of this compost in a hill. I found the depth of mud to vary from eighteen inches to nine feet. Where I found the mud deep and good digging, I dug five or six feet deep, filling the holes with blackberry roots, small stumps, and hassocks, within eighteen inches of the top, then covering it over with mud from the next hole, planting potatoes on the same. The clearing and planting were both done at once. The piece managed in this way was not less than two acres. A man would clear and plant from four to six square rods per day. Wages, at that time, were a dollar a day. Cost of clearing and planting, thirty-two dollars per acre. Cost of ditch, ten dollars per acre, making, in all, forty-two dollars per acre. The crop of potatoes was not less than two hundred bushels per acre.

Grass-seed was sown on the ground when the potatoes were dug, and the ground raked over. In 1845–6–7–8 and 9, making five years, it produced as good a crop of English hay as I ever raised upon any ground, without any manure except what was put on the first crop of potatoes. In 1850, the crop of grass began to fail, and some wild grass came in. In September, 1850, I plowed it by hitching the plow behind a pair of wheels, so that the oxen could walk on the grass. In the winter, when it was frozen, I teamed on manure, all kinds being mixed, about four cords to the acre. I planted it in 1851 with potatoes; the crop was from three to five hundred bushels to the acre. Finding this much more profitable than hay, I have managed it in the same way until the present time. When the potatoes have been dug early, before they got their full growth, I have not obtained so large a crop. When they have been allowed to remain in the ground, they have never failed of yielding three times as much as the upland.

The present season I invited the town clerk, with a number of other gentlemen, to witness the measurement of the ground, and the digging and measurement of the potatoes. From this, which I enclose, you will see that the crop can not be valued at less than three hundred dollars per acre, many having now been sold for more than one dollar and fifty cents per bushel."

Wilmington, Oct. 2, 1854.

IMPROVED STEREOSCOPE.



THE above is a perspective view of Mascher's Stereoscope Medallion, for which a patent was granted January 16th, 1855. It is represented as open, or as it is used for viewing the two stereoscopic daguerreotypes, or other photographic pictures, which, by its optical arrangement, are made to appear as one, and that not a mere flat representatien, but a form standing up out of the substance on which it is drawn like a substantial, living thing.

The following is a description of the engraving at the head of this article: C is the main central rim of a locket; B B are two lids with daguerreotype pictures, E E, on them; these lids are hinged on each side of the rim, C. A A are two supplementary lids, each containing a lens, D D. These are also hinged to rim C, as shown, but are fitted to fold within the picture lids, B B, and are arranged in such relation to the same, that, upon being opened and properly adjusted, the lenses, D D, will stand opposite to the pictures, and convert the medallion into a stereoscope, by which a person looking through the glasses, D D, will see but one picture, solid and life-like. The patentee has applied double convex lenses to these medallions, the sides of which are of unequal convexity, (as one to six,) according to Brewster, so that the picture is rendered very clear. A medallion of this character can also be used for a microscope and sun-glass.

This property of the stereoscope, of converting two flat pictures into one raised, substantial, life-like statue, appears, as yet, to be but little understood, and, consequently, but little appreciated by the public; and we can assure our readers, that they can form no adequate conception of the beauty of this invention, until they have, with their own eyes, looked through the two lenses, at the two portraits opposite them. The resulting picture looks no more like either of its component pictures than a circle does like a globe. The medallion is made of gold, and when folded up, it is impossible to distinguish it from the locket commonly worn. When closed, it measures one and three quarters inch diameter, and three-eighths of an inch thick. The engraving represents a No. 9 medallion, which the inventor sells for $12 each, but he has applied the same principle to No. 7 and 8, some of which, he informs us, he will shortly have on sale, at $10 and $11 each, respectively.

This medallion, with pictures, together with a handsome morocco case, in which it can be very safely kept, when not in use, weighs only three ounces, consequently it is admirably suited to send by mail to distant friends or relatives.

This locket exhibits the most extraordinary adaptation of means to ends that we have ever witnessed. Every particle of room is occupied, and is a most striking contrast to Prof. Wheatstone's first, and even to the most perfect foreign stereoscopes which are sometimes imported. Theirs are boxes occupying one-half of a cubic foot, this, one-half inch; the best imported ones magnify very little, whereas this magnifies four times. Even the stereoscopic daguerreotype case, for which this same inventor also obtained a patent in 1853, is much superior with respect to portability, magnifying power, easy management, durability, and cheapness, to the best imported ones, but this last invention is an improvement upon that. Mr. Mascher has turned the tables upon the Europeans, for he informs us that he exports large quantities to England, France, and the Spanish possessions.

We see by the report of the judges of the Metropolitan Mechanics' Institute, at Washington, that they entertain the same favorable opinions of this invention that we do, for they have awarded to it the First Premium. A similar acknowledgement was also made by the Franklin Institute of Philadelphia, last December, to the stereoscopic daguerreotype case, for they awarded to it the first premium, besides recommending the inventor to the Committee on Arts and Sciences, with a view to a still more favorable report, a recommendation and award extended to no other depositor.

More information can be obtained by letter, by addressing I. F. Mascher, No. 408 North Second Street, Philadelphia.

For the benefit of daguerreotypists who are not familiar with this beautiful invention, we add the following directions, commending this style of preserving the very image of one's friends, to all who can afford this choice luxury. For, we repeat it, the difference between this style of representation and the common daguerreotype, is greater than between a common painting and a correct statue; for in this is the appearance of life.

Directions to take and put up Pictures.

"Prepare two plates, of such size that the two, when pasted together, will fit the size of case intended, ready for the camera, in the usual manner, and if you have two cameras of the same size and quality, set them about two feet apart, and at equal distance from the person or subject intended to be taken. Draw the focus correctly in each, and take both pictures at the same instant of time, finish them in the usual manner, and you will find that they are not exactly alike, but each picture looks to opposite sides of the plates, which is owing to the angle at which they are taken. Cut the plates so that they will fit the size-border intended, and paste them together in such a manner that both pictures look to the middle of the plates, taking care that both pair of eyes are parallel with the sides of the glass and border. For this purpose you must have a parallel ruler, which you can purchase at the optician's for 37½ cents. It is absolutely necessary that the pictures be parallel, for if they are not, you will invariably see two indistinct pictures.

Some artists turn out pictures in which one picture is at least one quarter of an inch lower down than the other. How is it possible to see such pictures correctly?

If you have only one camera, prepare your two plates as above, adjust the focus properly, and take one picture. Let the subject sit perfectly still until you move the camera about two feet either to the right or left, re-adjust the focus, and take the second. Finish and put them up as above.

Again, you can have a camera-stand made, having the table of which, say

two-and-a-half feet long, and as wide as your camera is long, say ten inches. Provide this table with one set of stops at each end for your camera to slide against. Now, previous to taking the picture, adjust the table in such a manner that the camera will be perfectly in focus at each end of the table. Make a slide for your plate-holder, with an opening in, so that it will expose half of the plate to the action of the camera. The camera is to be laid upon one of its sides, and both pictures are taken on one plate.

Lay the camera on one end of the table, and take one picture; put on the cap, and quickly move the camera over to the other end of the table against the other stops; move the slide in the holder, in the same direction you moved the camera, and the other half of the plate will be exposed; take off the cap, and take the other picture. This plan is in successful operation, and is very convenient and good, but, it is believed, not so perfect as taking them (pictures) with two cameras.

Lastly, you can take both pictures at one time, on one plate with an ordinary camera, by means of two reflectors. Pictures have been taken this way that are very good. This plan is very good, cheap, and convenient. For full description of which, see page 348, vol. XVI. *Silliman's Journal.*"

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CULTURE OF THE ORANGE.

MESSRS. EDITORS:—In your valuable journal I have never seen mention of fruit-growing in Louisiana. Have you no correspondent in this fair spot of our Union? Or are the Louisianians so absorbed in *sugar-making*, than they have no time to devote to this beautiful occupation? There have been very fine peaches and pears raised in Louisiana; and I am sure that if one would wish to write upon the subject, he would find enough to make quite an interesting article for your paper. There is a fruit which I will introduce to your notice, and to the journal also. Would that I could make you more nearly acquainted with its sweet and delicious properties and qualities, than by a mere article in the paper! A rich, juicy, delicious Louisiana orange is what no editor, but New-Orleans editors, often enjoy.

The portion of Louisiana best adapted to orange growing is the Parish of Plaquemines, situated on each side of the Mississippi River, below New-Orleans. There are several fine orange groves in this parish; one in particular, consisting of three thousand trees. It is called "Essayons;" the motto on the button of the U. S. Engineers—meaning "let us try." It was planted by an engineer officer, and is now owned by his heirs. Fifteen hundred of these trees are nine years old; the rest are, some eight, some six years old. Ten years is generally the time for a tree to mature. After this period they are the most profitable crop a man can raise; for a tree will produce from fifteen hundred to two thousand oranges, which bring at his door $15 a thousand sometimes; never less than $10. If you will count up the thousands from the Essayons Grove at that rate, you will see that it will be quite a *small* fortune after a while.

The orange, as well as the lemon and citron, never sheds a leaf of its foliage. Every year adds new branches and new leaves. The same branch will not bear two successive years. A tree, in the course of one year, will

sometimes, if luxuriant in its growth, put forth nine or ten branches, five or six feet in length. The tree will mostly make wood till it is ten years old; after that it seems to reserve all its energies for the formation of the fruit. The seed is first planted in a nursery, then transplanted, at the age of one or two years, on the spot where it is destined to grow. The trees are put twenty feet apart each way. Some plant them at fifteen; but the best way is to give them ample room for the roots to run. The roots are not more than three inches from the surface of the ground, with the exception of the tap-root. The plan now is not to trim at all, if possible. A tree left to its own natural disposition, will make a most beautiful, symmetrical production. They require no manure, but the virgin soil of Louisiana seems to suit them admirably. They will get scrubby in old soils.

There are some of the diseases which attack orange-trees which are quite unmanageable. I will mention two very frequent ones. The lice is a small, blue insect, which covers the tree, bark, leaves and all. They will feed upon the leaves, and, in a few months, disrobe an orchard of four or five hundred trees, leaving them as bare as your hand. The tree, at the end of a year or so, will recuperate, and again put forth its leaves, and bear its wonted treasures, but not in so great abundance. Another, and apparently irremediable trouble, is a kind of dry rot which attacks the trunk of the tree, at its base, just where the root begins. It is at first a small spot, not more than a quarter of an inch large, but soon runs in a ring all round the base of the trunk, which brings a speedy death to the tree. The only remedy is to dig up the invalid by the roots, and consign it to the embrace of the Father of Waters, putting in its stead a healthy tree, that will repay your care and labor.

If any of your subscribers can give us through your paper a remedy for these evils, he will benefit a goodly interest in Louisiana. The Louisiana orange is much superior to the Havana or Sicily, for the reason that these have to be plucked green to be sent here, while ours are given us in all their full, rich, native growth and sweetness.

The best time to plant orange trees is in March, from the 15th to the last; before that it is generally too cold. Anything which will improve the culture of the orange will be quite acceptable in your columns to at least *one* of your subscribers. Respectfully yours, A. S.

NATIVE COFFEE.—The Calaveras *Chronicle*, Cal., says that wild coffee is found in abundance in that neighborhood, similar to the plant cultivated in Mexico, South and Central America. The berries resemble those of the genuine coffee plant.

CHALK.—A specimen of this calcareous earth was shown us this week by A. G. Lawrence, Esq., of Campo Seco. It forms the base of a hill in that vicinity, the surface of which is a volcanic drift, containing a very rich gold deposite, which pays from $3 to $10 a cart load. The chalk hill has not been penetrated to any considerable depth, but it is likely that underneath this deposite gold will be found. A curious phenomenon may be observed at this hill—one part of it is composed of chalk, while the other is the usual red clay formation, the line of demarkation being plainly visible.—*Cal. Chronicle.*

COLORS OF HANGINGS, FURNITURE, ETC.

We have been exceedingly pleased with an article upon "Color in Nature and Art," written by one who proves himself well qualified for the task, in a recent number of Blackwood. We have hitherto acted on the belief that cultivation of this sort is of great importance—scarcely less than the cultivation ordinarily discussed in agricultural journals. For lack of acquirements of this sort, so many of our wealthy families are as utterly destitute of good taste in their household arrangements, as they can well be. Many a poor man's hovel, in rural districts, or in the city even, exhibits far greater proficiency in these matters. Even our upholsterers have learned nothing, and generally know nothing, about them. All they can do is to imitate their predecessors, who were just as ignorant as themselves, or to imitate somebody whom they accidentally met with, who did so-and-so, and, it may be, under *totally different* circumstances. Hence, we see what we see in our gorgeous mansions—a genuine Indian display of brilliant colors, exhibiting about as much science and skill as we should find in a medium Crow Indian. Some of these natives, as our own eyes have had the evidence, have, by intuition, a far more cultivated taste. But our object is only to present an extract, and commend it to general attention. After discussing sundry relative topics, the writer proceeds thus:

"In coming to the furniture of our dwellings, it must be confessed that, so innumerable are the possible combinations of color, it is impossible to lay down many laws of general application. In large rooms, bright, contrasting colors may be employed; whereas, in small rooms, the harmony should be not of contrast, but of analogy; in other words, the furniture of small rooms should in general have but one predominant color, and the contrasts exhibited be only those of tone. On this principle, hangings with varied and brilliant colors, representing flowers, birds, human figures, landscapes, etc., may be employed in the decorating of large rooms; whereas, chintzes are only suitable to small rooms, such as cabinets, boudoirs, etc. In bed-rooms, the window-curtains and those of the bed should be similar; and if there be a divan, it may be similar also; for we may remark, that it is conformable with the object of boudoirs, and similar places, to diminish their extent to the eye, by employing only one material for the hangings and chairs, instead of seeking to fix the eye upon many separate objects.

Of hangings—and our remarks are almost equally applicable to the general tone of a room—we may say that, in consequence of an apartment never being too light, since we can diminish the day-light by means of blinds and curtains, it is best that the hangings be of a light and not of a dark color, so that they may reflect light rather than absorb it. Dark hangings, therefore, are proscribed, whatever be their color. Red curtains are to be met with very frequently in this country; yet it must be said that red and violet, even in their light tones, ought to be proscribed, because they are exceedingly unfavorable to the color of the skin. Orange can never be much employed, it fatigues the eye so much by its intensity; and, indeed, among the simple colors there is scarcely any which are advantageous, except yellow, and the light tones of green and blue. Yellow is lively, and combines well with mahogany furniture, but not generally with gilding. Light-green is favorable, both to gilding and to mahogany, and also to complexions, whether pale or rosy. Light-blue is less favorable than green to rosy complexions, especially

in day-light; it is particularly favorable to gilding, associates better than green with yellow or orange-colored woods, and does not injure mahogany. White hangings, or hangings of a light gray, either normal, or tinged with green, blue, or yellow, uniform, or with velvet patterns similar in color to the ground, are also good for use.

In regard to the draping of floors, it must be borne in mind, that for a carpet to produce the best possible effect, it is not enough that it is of the best manufacture, and of excellent colors and pattern; it is also requisite that its pattern be in harmony with the size, and its colors with the decorations of the room. It is important for manufacturers to know how to produce carpets which will suit well with many different styles of room furniture; and, in our opinion, the best mode of attaining this end is, to make the light and bright coloring commence from the centre of the carpet; for it is there (that is to say, in the part most distant from the chairs, hangings, etc.) that we can employ vivid and strongly-contrasted colors without inconvenience. And if we surround this bright central portion with an interval of subdued coloring, we shall be able to give to the framing colors (those around the margin of the carpet) a great appearance of brilliance, without injuring the color of the chairs and hangings. With respect to the carpets of small or moderately-sized rooms, we may lay down the rule, that the more numerous and vivid the colors of the furniture, the more simple should be the carpet, alike in color and pattern—an assortment of green and black having, in very many cases, a good effect. On the other hand, if the furniture is of a single color, or if its contrasts consist only of different tones of the same color, we may, without detriment, employ a carpet of brilliant colors, in such a way as to establish a harmony of contrast between them and the dominant hue of the furniture. But if the furniture is of mahogany, and we wish to bring out its peculiar color, then we must not have either red, orange, or scarlet, as a dominant color in the covering of the floor.

The covering of chairs may present either a harmony of contrast or a harmony of analogy with the hangings, according as the room is large or small; and a good effect may be produced by bordering the stuff at the parts contiguous to the wood with the same color as the hangings, but of a higher tone. Nothing, we may add, contributes so much to enhance the beauty of a stuff intended for chairs, sofas, etc., as the selection of the wood to which it is attached; and, reciprocally, nothing contributes so much to augment the beauty of the wood, as the color of the stuff in juxtaposition with it. In accordance with the principles of coloring which we laid down in a preceding part of this article, it is evident that we must assort rose or red-colored woods, such as mahogany, with green stuffs; yellow woods, such as citron, ash-root, maple, satin-wood, etc., with violet or blue stuffs; while red woods likewise do well with blue-grays, and yellow woods with green-grays. But in all these assortments, if we would obtain the best possible effects, it is necessary to take into consideration the contrast resulting from height of tone; for a dark blue or violet stuff will not accord so well with a yellow wood as a light tone of these colors does; and hence, also, yellow does not assort so well with mahogany as with a wood of the same color, but lighter. There is no wood more generally used by us than mahogany, and no covering for sofas and chairs more common than a crimson woolen stuff; and in this we are influenced not so much by any idea of harmony, as by the two-fold motive of the stability of the crimson color, and the beauty of the mahogany. In assorting these, we will often do well to separate the stuff from the wood by a cord or narrow galloon of yellow, or of golden-yellow, with gilt nails; or,

better still, a narrow galloon of green or black, according as we wish the border to be more or less prominent. The red woods always lose a portion of their beauty when in juxtaposition with red stuffs. And hence it is that we can never ally mahogany to vivid reds, such as cherry-color; and more particularly to orange-reds, such as scarlet, nacarat, and aurora; for these colors are so bright that, in taking away from this wood its peculiar tint, it becomes no better than oak or walnut. Ebony and walnut can be allied with brown tones, also with certain shades of green and violet."

CULTIVATION OF THE TOMATO.

This most delicious fruit deserves better cultivation than it often receives. We find the following in the March *Horticulturist*, and commend it to the notice of our readers:

"Let every one who has a tomato plot,—and who that has a garden has not,—notice the plants when in full bearing—and one or more will show more excellence than the others—pick from the very best the most desirable fruit, and save them for seed. Repeat this each season, always having an eye to form, color, productiveness, flavor, and size; and if no improvement takes place, then consider the writer an ignoramus. I have followed the above plan for several years, and the result is quite satisfactory; and so it will be to others if adopted. Let this be more generally done by private growers; let them raise their standard of excellence, and the awarders of prizes at the public exhibitions follow suit, and the large growers for market will soon be forced to take a better sample to the city, instead of the thick-skinned, hollow subjects, which are too often seen on the huckster's stall, and which "bounce" like a foot-ball. We shall then have weight and quality, in return for good money.

GENERAL CROP.

To get the general summer supply, and likewise as early as possible in the open ground, it is advisable to have strong and healthy plants ready to be turned out in a warm aspect, so soon as all danger of frost is over; or where there is the convenience of glass box-frames, a portion may be planted therein two or three weeks earlier, some at the distance apart that it is intended they should remain. A good start is a great advantage, and fine plants will furnish fruit much earlier, and in more abundance through the summer, than those which are weak and stunted to begin with; consequently, the little extra trouble required is more than repaid. The common plan of sowing on a hot-bed, and leaving the plants to crowd each other up till planting time, and then removing, almost without roots, only partakes of the "penny-wise and dollar-foolish" action that is too often practiced, and always ends in keeping the per centage profits small. Yet we see persons, who ought to know better, still drawing along in the old way; and when thing go wrong, blaming everything but their own want of observation and foresight. All kitchen vegetables, without exception, are of the best quality when well grown, and nothing deteriorates this quality more than starving the young plants in the seed-bed. Do not be in too great hurry to begin, but, when started, take care that there is no check until ready for use, is advice that all vegetable

growers ought continually to act up to. In the present instance, the seed may be sown about the middle of February, on the surface of a gentle hot-bed, upon which is three or four inches of good friable mold, and covered over with a box-frame; or in boxes in a hot-house, where a temperature of 50° to 55° by night is obtained. When the plants are two or three inches high, transplant either into another or the same bed, or into boxes about six inches apart. Where the required supply is not large, they may be put up singly into pint pots; and, after planting, give a light watering to settle the soil around the roots. Admit all the light possible, and, in mild days, let in a good supply of fresh air, but avoid cold winds and frost; the object being to keep a moderate temperature, without checking the progress of growth, and yet not so warm as to draw plants up weak. As the weather milds off, the glasses may, in fine days, be entirely removed. Pots or boxes are only necessary when the hot-house is used; and, in the former case, when they become filled with roots, the plants ought to be moved into those of a larger —say two quarts. By the first week in April, both may be removed into a cold frame, and kept close for a day or two; after which air should be freely admitted during warm days, and gradually increased, until the glasses are entirely pushed down, but be careful to cover at night when frost is apprehended.

It is often amusing, and sometimes even annoying, at the beginning of summer, to see our neighboring cottagers scouring over the country in search of tomato plants. Almost everybody who has a patch of ground wants them, and, in many cases, they are not to be had "for love or money;" yet they have the means at command to raise for themselves; every house has its window, and the only space required, is enough room for a box two feet long, by six inches wide, and four inches deep, and anybody of ordinary ingenuity can fix a little glass frame over this, to counteract the dry atmosphere of a dwelling-room; such a simple contrivance will accommodate as many plants as will be required, and be less expense, than the loss of time and shoe-leather that is expended in troubling other persons, who, too often, have only time and convenience for their own stock.

Almost any kind of soil will answer for the tomato; but it prospers the best, and produces fruit of a finer quality, in a well-drained, tolerably-fertile, but not over-rich loose mold. So soon as all danger of frost is past, begin to plant out; loosen up the soil well, dig holes four feet apart, six inches deep, and as many across; lift each plant with a ball of earth; do not keep the roots exposed longer than is necessary, and, in fixing the plants in the holes, let them be placed about the same depth as they were previously; cover up, and press the soil somewhat around the neck, and lift a little extra up to it, which will encourage fresh roots and strengthen the plant. If the weather be dry, give a good soaking of water; and so far all is finished.

A few words may be said about training. The most common mode is to spread out the branches, and let them trail along the ground, in which case, if cleanliness be cared for, there ought to be a covering of marsh hay or straw placed over the surface. Sometimes brush-wood is laid flat, and the branches allowed to lay over the top of it, which elevates the fruit above the soil, and prevents it from rotting, if the season should happen to be wet; but there is no other advantage in the method, and it is inconvenient when gathering. The neatest and cleanest plan, and one which may be adopted in all private establishments, is to sink poles in an upright position along each row, leaving the tops five feet above ground, (if placed four yards apart, it will be close enough,) and fasten wires horizontally to them, which will form a cheap

trellis to train upon. As the branches elongate, they may be tied loosely to these wires, and a kind of hedge-row is formed with very little labor—the fruit is free to the action of air and light, and is unquestionably of much better flavor.

SUCCESSION CROP.

Notwithstanding the extreme fruitfulness of the tomato, it often happens that the earliest planting becomes exhausted before the end of summer, and only produces a decreased quantity of inferior fruit, when a succession becomes useful. In this case, it is only necessary to sow in the open ground about the middle of April, and transplant as recommended above. The plants from this stock will continue to yield with certainty until cut down by frost, and, if covered over at night, may be kept bearing longer than if unprotected.

GROWING THROUGH WINTER.

There is no difficulty in growing and fruiting the tomato through the winter and spring months, where such is desired. Indeed, no fruit-bearing plant is more easy to manage thus artificially, with the possession of a suitable structure. A close and sheltered glazed pit is the best and most economical, although a moderately warm plant-house is nearly equally convenient; but there must be *a full exposure to the sun*, or the blossoms will not fertilize. The seed may be sown the last week in August, and when large enough for transplanting, remove the plants into the house, having previously prepared for their reception. A suitable provision may be made by fixing boards, with the sides upright, along the inside front of the house, and three feet from it; fill in one foot deep with good, fresh mold, and place the plants three feet assunder in the bed so formed. If this arrangement can not be adopted on account of some peculiarity in the house, large boxes, filled with rich earth, will answer the purpose to almost equal advantage. As the plants continue to grow upward, train them near the glass, in the same way as a grape-vine, only allow the side shoots to spread out, so as to cover the whole surface so far as they extend. This may be done very simply by stretching copper wires horizontally along on the under side of the roof, and eight inches from it. After planting, give plenty of air till cold nights come on, when a little fire-heat is necessary. The most suitable temperature through the night is from 55° to 60°; and this ought to be maintained pretty regularly. In the day-time, it may be allowed, with sun-heat, to rise to 75° or 80°, always admitting air on every suitable opportunity. In cloudy or foggy weather, it is well to keep close, or to give air very carefully, as the plants, if exposed to too much damp and cold, are subject to be attacked by a black mildew, which destroys the leaves and weakens the blossoms, rendering them abortive. If such should occur, sprinkle a little sulphur upon the coolest parts of the heating apparatus, and give a trifle more heat for a few days, when the pest will disappear. As the blossoms continue to expand, go over the whole once a day, when the sun shines, and give them a sudden but light flirt with the finger, which will liberate the pollen, and greatly assist impregnation, and nip out the end of each shoot, a leaf or two above the flowers, to help the embryo fruit to swell. I have never been troubled with insects in forcing this fruit, but if red spider (*acarus*) should appear, the sulphur will destroy it; and green or black fly (*aphis*) may be got rid of by fumigating with tobacco. No further care is requisite than occasionally removing superfluous or weak branches, withered leaves, and such like; and the crop, with attention, will continue to produce from Christmas until those in the open ground are ready for use."

RIPE GRAPES IN DECEMBER.

In accordance with your request, I herewith give you the *modus operandi* of growing grapes under glass, to ripen them by the December sun. My former practice, to ripen grapes about the first of April, was the same as practised by others, say warming the roots by hot manure in the middle of November, and continuing the heat in the border, by fresh supplies of manure, until the grapes ripened. I noticed the roots are injured from this practice, and the expense is very great, not only for the manure, but also for the labor of looking after the border and replenishing it. Not being satisfied, I concluded to try the following plan, which has proved quite successful, and gives me the grapes earlier.

We will suppose the vines were started in November of last year, (1853.) To get them in this state, their habits have been changed from the natural time of starting. Now we will encroach still further, and start them in August, say the first. You will find no delay in the pushing of the bud after pruning, as the roots are warmed by the summer sun, and there is no danger of killing the young rootlets from hot manure. The progress of the vines will surprise you: in a week they will require tieing up to the rafters, and very soon after you will be assured of a good crop of grapes from the fragrance of the bloom.

It is now of the utmost importance to attend in season to keep the heat in the border which the sun has so generously supplied, and a plan suggested itself to me from the practice of keeping ourselves warm by a blanket, of which I have manufactured some 600 pairs a day for the past ten years. It is therefore very natural that I should have thought of a blanket to cover the border to keep the heat in; but it would require a great many woollen blankets to cover a border one hundred feet long and forty feet wide, and a great many thicknesses to give sufficient protection. However, we have the principle in the thought, and now for the practice. Instead of the woollen blankets, I substituted two tons of meadow hay, very dry; this covered the border about one foot in thickness, and in order to keep it dry, I placed upon the top of it about six inches of wool waste and manure, to absorb the rain, until the frost should make it a more perfect protection. This has answered the purpose; the heat has passed from the border about three degrees a week from the first of December, at which time it was 60°, and the fruit has ripened perfectly. It was generally supposed by grape-growers that I should fail in color and flavor, as well as size, from want of sun in December; but my experiment proves that plenty of pure air is quite as important.

My mode of ventilating is entirely new, and appears favorable to the growth of the grape. The warming apparatus inside of the house is simply a stove at each end; consequently, the ventilation is complete, as the heavy, bad air is constantly rushing to the stoves and passing out of the tunnels. I do not, in speaking of this mode of ventilation, recommend stoves for heating in preference to the common furnace and hot-water pipes, but refer only to the principle of ventilation, which can be applied to the common furnace by conducting the air from the house to supply the coal instead of the outside air. This plan would as effectually draw off the bad air as my stoves.—*Correspondent Hovey's Magazine.*

THE PRACTICAL SCIENCE OF CANDLE-MAKING.

The Belmont Candle Factory—in that curious London district, Vauxhall—presents a famous example of applied chemical science. Rather more than forty years ago, Chevreul, the French chemist, announced to the Academy of Sciences the important fact, that fatty bodies are of a compound kind. He it was who first pointed out that fat is not a simple organic substance, but a salt formed of animal acid, (margaric acid,) combined with an animal base, in such a state as to be severable, the acid then being obtained separately. This discovery—the essential base of the modern art of candle-making, the fatty acid set free from the less inflammable base, being wonderfully improved as regards its burning properties—led to the vast extension, in this country, of the stearic candle manufacture, so ably represented by what is so well known as "Price's Patent Candle Company;" and it is to the obtainment of this acid in a pure hard state, and at the cheapest possible manufacturing cost, that the candlemaker's chemist has since given his almost undivided attention.

This point gained, Chevreul, still pursuing his subject, came upon another fatty acid—oleic acid—originally developed in lard. Putting these purely scientific researches into the workman's hands, as in all such transitions, was a task of great difficulty, and it was not until a very few years ago that these discoveries, in fact, assumed a really practical and commercially valuable form.

Acting upon Chevreul's suggestion, M. de Milly, a Parisian candle-maker, set to work to disengage the acids from their base, "glycerine," by boiling the raw material, tallow, with thin cream of lime, on the principle of what is now termed "lime saponification." The glycerine dissolved in the water, the fatty acids combining with the lime. Sulphuric acid is then used for destroying this combination; the acid seizing on the lime, and setting free the fatty acids, pressure being finally employed to obtain the solid mass.

Thus far the French led the way in this curious manufacture; but, in 1829, our countrymen stepped in. At that date, Mr. James Soames patented a plan for separating the solid and liquid parts of cocoa-nut oil, and this process subsequently become the property of Messrs. Price, who were induced to establish large cocoa-nut kernel crushing mills in Ceylon, to keep up their supply of the now necessary cocoa-nut oil. Large plantations of cocoa-nut trees were made in Ceylon; and of these, now coming into bearing, Messrs. Price possess above 1,000 acres. The oil is obtained from the fruit by drying the kernel, and then crushing it under edge-stones—the reduced mass being subjected to cold pressure, for obtaining the best portion of the valuable oil, and afterwards to hot pressure for getting out the whole attainable oleaginous matter.

The solid matter resulting from this pressure, or the cocoa-nut stearine, was, in itself, a step in advance of the tallow product; but the candles now known as "composite," so independent of snuffers, were yet undiscovered. In 1840, Mr. J. P. Wilson, anxious to produce economical self-snuffing candles, for the particular purpose of the illuminations on her Majesty's marriage, found that cocoa-nut stearine, mixed with the newly-discovered stearic acid, produced candles burning with a good light, with the great advantage of requiring no snuffing attendance. They are the candles made on this general principle that

we now find in every grocer's shop, and in every dwelling-house, whose darkness is as yet undispelled by the brilliancy of gas.

Later chemical discovery—for it must be remembered that the whole routine has been the result of a continued chain of the elegancies of chemical research—led to the distillation of fats, previously acted upon by sulphuric acid, or by nitrous gases. The raw material now used is palm oil, and in the existing refinement of the process, six tons of palm oil are subjected to the action of 6¾ cwts. of concentrated sulphuric acid, at a temperature of 350° Fahr. Under this treatment the glycerine is decomposed, sulphurous acid gas is evolved to a considerable extent, and the fat is changed into a mixture of fat acids, dark in color, and possessing an elevated melting point. The product is washed, and it is then deposited in a still, from which the air is excluded by the agency of stearine.

In its original condition, palm oil is of a bright orange red tint, as thick as butter. After the acidulous treatment and the washing, it is changed to a hard black mass. The distillation separates this into the pure acids, brought over in the form of vapor, and the charred refuse matter left behind in the still. The distilled mass may be used for making cheaper classes of candles; or by being subjected to severe pressure, cold and then hot, it is brought into the condition necessary for making the Belmont sperm candles.

The cotton used as the wick is plaited, and then dipped in a solution of borax. It is this plaiting which gives the wick the slight curvature at the flame, and the preparation with borax renders the cotton somewhat less combustible, except at the point which we find is always bent over to the edge of the flame, where it is in contact with the air, and is consumed. The moulding of the fatty matter, or the disposition of the combustible mass round the wick, is effected in a frame, which has attached to it a box, with a wick bobbin for each mould, the movement being so contrived, that the action which expels one set of moulded candles, draws off enough wick for the succeeding operation. Of course, each candle is moulded upon the free end of the wick length, and the severance is effected by the agency of a traversing knife. Forceps are employed to hold each wick over the centre of its mould, the axis of the two being made to coincide with accuracy. In this condition, the mould is run through a steam-heated chamber to warm it, the required temperature being reached by the time the mould arrives at the filler. The filled mould then passes onwards, and, when cool enough to admit of the withdrawal of the forceps without injury to the moulded mass, the superfluous fat is removed, prior to the mould being emptied. All these motions are performed by means of guide railways—a clockwork precision being observed throughout the operation. Each apparatus contains 200 moulds, each mould having 18-inch bobbins, which, when full, hold 60 yards of wick.

Chemistry has done more for the candle manufacture than mechanics. Much yet remains to be done in the manipulatory processes, for at present, some wicks will get out of the candle's centre, whilst the bottoms occasionally turn out to be hollow. Hence, the very best candles are yet made by the old hand system.

During the early part of the present year, Mr. G. F. Wilson, the managing director of the works, introduced castor oil as a new and economical material for this manufacture. Castor oil, when treated with hyponitric, nitrous, or sulphurous acid, solidifies, and furnishes what is called "palmine." This palmine, when used after being pressed, is well suited for hardening tallow, as well as for mixing with wax. In making composite candles with it, it is mixed with an equal amount of hard fat acid.

In 1852, the Belmont works employed somewhere about 1,000 hands, turning out upwards of 100 tons of candles a week, of a value of £7,000 or £8,000. Since that time, the works have been surprisingly increased, the number of the employed being 2,000, working upon a capital of £700,000. They cover two acres of ground, besides further space at the Battersea offshoots.

But this extension was not equal to the necessities of demand, and an enormous branch from the parent undertaking has been just now got to work near Liverpool. The new works are named from Bromborough Pool, at which point on the Mersey they are placed. Here the vast area of $3\frac{3}{4}$ acres is actually roofed in with corrugated iron; fourteen steam boilers being fitted up to supply the great steam-heating power required in works of this kind.

These works, like their progenitors in London, are perfect models of good arrangement and management, and they approach about as near to the perfection of combined industrial operation as any existing example of the great factory system of modern times.—*Pract. Mech. Journal, Glasgow.*

TELEGRAPH ROUND THE GLOBE.

[The following paragraphs have been or are going "the rounds" of the press. We have not published or noticed them, because we see, or think we see, in them unmistakable evidence of humbug. Still, as we believe the thing is not only practicable, but will be, in fact, accomplished in a few years, on some more feasible route, we take this method of attracting the attention of the public to its claims.—Eds. P. L. & A.]

J. P. Shaffner, Esq., the editor of the *American Telegraphic Magazine*, has just returned from his expedition to Europe, where he has been making arrangements for the construction of an electric telegraph around the world. One object of his visit was to negotiate with the Danish Government for the exclusive right to lay a line over Greenland, Iceland, the Faroe Isles, and Denmark, for the term of one hundred years; and the acquisition of similar rights over Norway, Sweden, and Russia.

The scheme is a bold one, and large enough for any capacity. The route proposed is definitely traced, and seems quite practicable. From Labrador to Greenland is about five hundred miles. From the point of landing, the line is to extend underground around Cape Farewell to a point on the east coast of Greenland, favorable for a submarine connection with Iceland, A subterranean line across the eastern coast of that island will connect with a submarine wire running to the Faroe Isles, and thence to Norway. By this route there will be no submarine section of more than five hundred miles. Treaties with the Emperor of Russia contemplate the extension of the line from Stockholm, in Sweden, to St. Petersburg.

Mr. Shaffner proposes to run his line to Moscow, and thence into Asia, piercing Chinese Tartary, extending to the Sea of Ochotsk, and by the way of Kamschatka reaching Cooke's Inlet in North-America. From this point the line will be run along the Pacific coast to Oregon, and south to San Francisco, California, etc., etc. The earth will thus be girdled with one continuous and unbroken flame of electric light.

In the submarine department of this work, Mr. Shaffner has associated

with him Mr. John W. Brett, who has been the projector and successful constructor of the vast ranges of submarine and subterranean lines of the old world.

In these negotiations, Mr. Shaffner has been singularly fortunate. He has succeeded where the most skillful diplomats might have failed. He says that he had one great element of strength; that was, he was an *American*. His Majesty the King of Denmark intimated to him that he would not have considered the proposition had it come from a citizen of any other nation; but he informed Mr. Shaffner that he granted the patents under the belief that there would be no obstacles in nature that could be a barrier against the genius and enterprise of his countrymen.

PROPERTIES OF CHARCOAL.

THE following is an interesting article, by J. Stenhouse, F. R. S., in the *Journal of the Society of Arts*, London:—

"My attention was particularly drawn to the importance of charcoal as a disinfecting agent, by my friend, John Turnbull, Esq., of Glasgow, Scotland, the well-known extensive chemical manufacturer, Mr. Turnbull, about nine months ago, placed the bodies of two dogs in a wooden box, on a layer of charcoal powder a few inches in depth, and covered them over with a quantity of the same material. Though the box was quite open, and kept in his laboratory, no effluvium was ever perceptible; and, on examining the bodies of the animals, at the end of six months, scarcely anything remained of them except the bones. Mr. Turnbull sent me a portion of the charcoal powder which had been most closely in contact with the bodies of the dogs; I submitted it for examination to one of my pupils, Mr. Turnbull, who found it contained comparatively little ammonia, not a trace of sulphurated hydrogen, but very appreciable quantities of nitric and sulphuric acids, with acid phosphate of lime.

Mr. Turnbull subsequently, about three months ago, buried two rats in about two inches of charcoal powder, and, a few days afterwards, the body of a full-grown cat was similarly treated. Though the bodies of these animals are now in a highly putrid state, not the slightest odor is perceptible in the laboratory.

From this short statement of facts, the utility of charcoal powder as a means of preventing noxious effluvia from church-yards, and from dead bodies in other situations, such as on board a ship, is sufficiently evident. Covering a church-yard to the depth of from two to three inches, with coarsely powdered charcoal, would prevent any putrid exhalations ever finding their way into the atmosphere. Charcoal powder, also, greatly favors the rapid decomposition of the dead bodies with which it is in contact, so that, in the course of six or eight months, little is left except the bones.

In all the modern systems of chemistry, such, for instance, as the last edition of *Turner's Elements*, charcoal is described as possessing antiseptic properties, while the very reverse is the fact. Common salt, nitre, corrosive sublimate, arsenious acid, alcohol, camphor, creosote, and most essential oils, are certainly antiseptic substances, and, therefore, retard the decay of animal and vegetable matters. Charcoal, on the contrary, as we have just seen, greatly facilitates the oxydation, and, consequently, the decomposition, of any organic substances with which it is in contact. It is, therefore, the very opposite of an antiseptic."

THE SUBMARINE TELEGRAPH.

At a late meeting of the British Association, at Liverpool, Mr. J. W. Brett read a paper on "The Origin of the Submarine Telegraph, and its Extension to India and America." The author gave an account of the difficulties encountered in establishing the first submarine telegraph, which has now been successfully working for three years between France and England; and stated that he had established the submarine telegraph between England and Belgium with equal success, which had been in operation since the first of May, 1853. He then explained some of the difficulties he had encountered in laying down the two submarine lines in the Mediterranean in July last—especially in passing a depth exceeding, by 100 fathoms, what had previously been ascertained to exist on the route between Piedmont and Corsica. The depths encountered between England and France, and England and Belgium, did not exceed at their maximum 30 fathoms; whereas, the submarine cable was laid down in the Mediterranean at a depth of 350 fathoms, exceeding about eight times that of the English Channel. It was the general impression that the submarine cable would part by the great strain it would encounter in passing these great depths; for which reason he was strongly advised, and more particularly by one of the most able and experienced officers of the Sardinian Government, who accompanied and aided the undertaking, to make a detour of about eight miles by the islands of Gorgona and Caprija, where the soundings were known not to exceed 100 fathoms; but the great point to be considered was, whether he would not incur the risk of a total loss of the cable by not doing so. The prudence of these arrangements, Mr. Brett said he fully admitted; but that it was a question he was determined to solve at once—for as this telegraph was not a telegraph to Corsica, but part of a line to India, to be shortly completed to Africa, where still greater depths must be encountered, it was necessary to test the fact. He then explained the difficulties they encountered in paying it out, when, after the line had been paid out, as he believes, along the top of a submarine mountain for some miles, at a depth varying from 180 to 200 fathoms, it suddenly, as he believes, came to the edge of a precipice, making a total of 350 fathoms (exceeding by about 100 fathoms any depth marked in the various charts on this route,) where it ran out with frightful velocity; and had the cable been less strong, the whole must, of necessity, have been lost; and they were compelled, nevertheless, to anchor by the electric cable all night, to restore the injury that had occurred; but he felicitated himself upon the experience thus gained from his determination in taking the deepest route, as it had led to many valuable suggestions necessary to successful operations in great depths; and the able Commander, the Marquis Ricci, who up to this time had been in doubt of its success, then admitted that this kind of cable contained such remarkable elements of strength in its form and combination, that he believed only certain improvements to be necessary (on which we had been consulting,) to successfully lay it down even in the greater depths of the Atlantic. Mr. Brett, in conclusion, explained his reasons for selecting this line to India *via* Egypt, in preference to the line by the Italian peninsula, which would ever be impeded by the jealousies and restrictions of the petty States; whereas, to the shores of Africa, the Mediterranean telegraph passed through only the States of France and Sardinia, who had encouraged it by liberal guarantees, and admitted that all communications, in whatever lan-

guage, should pass unrestricted through their States. From Africa he stated he had two plans in contemplation for its extension to Egypt—one, a line dropped in the Mediterranean in the shallow line near the coast, and another buried in the sand along the shore—both of which he was satisfied might be laid secure from derangement of any kind. He then referred to the proposed telegraph to America, and of the depth on the proposed line, as recently ascertained by Lieut. Maury, of the United States, with some estimates of the weight and cost; and stated that a return of £100 to £150 per day would give a fair interest on the necessary capital; that his plan comprised several lines of communication; and that he entirely deprecated the idea of a single line of communication, which he believed could not be done.

FOREIGN EXTRACTS.

How Smoke is Made in London.—Statistical facts tell us that there are upwards of 3,000,000 tons of coals yearly borne into London, by sea and railway, and that somewhere about one-third of this amount is there consumed in furthering the ends of manufacturing industry. Now, it is a well-known fact, established by practice, that by the better consumption of smoke, and obtaining more perfect comustion, 20 per cent. of fuel is saved; hence 20 per cent. on 1,000,000 tons amounts to 200,000 tons of coal saved annually to the nation, and that, at an average cost of £1 per ton, is £200,000 saved to the metropolitan proprietors of furnaces and manufactories, which would otherwise pass off in smoke, contaminating the atmosphere. According to this calculation, it may be taken as a twofold and total saving to the nation of £400,000 per annum; and that without regarding it in a sanitary point of view, for as already the improved appearance of the London atmosphere is distinctly observable, it is unnecessary to point out the injury inflicted upon the public health, or the pecuniary loss we sustain in the apparently trivial matters of soap, and wear and tear of linen, by the deposit of the large amount of carbonaceous matter always present in the atmosphere, inasmuch as smoke cooled is soot, but when heated to 600° Fahrenheit, becomes highly inflammable gas, and is consumed; therefore, every wreath of smoke that curls up a chimney is fuel wasted.

Copper Mines, South Africa.—There is a likelihood of copper-mining being carried on near the north-western limits of the colony, at a place called Nemaqualand, on a large scale. The ore is said to be very rich in metal, and has realized from £40 to £60 a ton. It is so easily worked that three men can quarry and prepare a ton a day, worth nearly £40. In is said that it can be raised and sent to England at a cost of £13 a ton. The quantity of metal varies from £45 to £75 per cwt. Several companies have been formed to carry on mining operations, and some correspondence has been published between the Colonial Governor and the Secretary of State, as to the terms on which grants would be made of the lands underneath which the ore lies embedded. The great difficulty seems to be as to roads. Hondeklip Bay, forty miles off, is the nearest point of export, and hundreds of tons of ore have been brought to the surface, waiting for removal, which cannot be effected at any price. A railroad has been contemplated, but the necessary funds are not at present forthcoming.

Gas in the North American States.—Coals are obtained in large quantities from Britain and from Canada for the purpose of manufacturing gas in towns along the seaboard of North America. South of New-York, the oolitic coal-field of Virginia sends a portion of the supply; and in the states west of the Alleghanies, the nearest coal-field yields the whole required. In New-York, two companies supply the public with gas, and manufactured last year 300,000,000 of cubic feet. At Philadelphia, the municipal corporation are the only manufacturers. Last year they made about 232,000,000 of cubic feet. Gas is a good deal dearer in the United States than in Britain. In London, the average price is 4s. per 1000 cubic feet. The lowest price in America is at Philadelphia, where two dollars are charged for 1000 feet, that is to say, more than 100 per cent. higher. In Liverpool the price is a little higher than in London, the price at the former town being 4s. 6d. per 1000 feet. The laborers employed at the gas-works receive from one to two dollars a day, according to their skill and the demand for their labor. Some new gas-works, lately built at Philadelphia, are said to be of excellent construction and arrangement. They comprise a telescope gas-holder, 160 feet in diameter, and 90 feet in height, with twelve guide towers made of cast-iron and stone, in an ornamental form.

AMERICAN PATENTS.

Improvement in Machinery for Combing Wool. Charles G. Sargent, of Lowell, Mass. Dated, August 15, 1854.—In this machine, the wool is pulled out from the main lot, and stapled in small successive portions before the operation of combing commences, by which means the fibres are drawn out and laid lengthwise, which much facilitates the subsequent operation of combing. It also causes the pincers or nippers, which draw out and staple the wool, to revolve continuously, any suitable number of them being brought up in succession to the feed-rolls, by which means the various operations of the combing process are caused to proceed simultaneously upon different portions of material, without the necessity, which has heretofore existed, of performing them one at a time, all the others being for the time interrupted. It is evident that the withdrawing of the separate portions from the feeding-rollers must be an intermittent operation, and it has been the object of the inventor to make this intermittent movement approach as nearly as possible to a continuous one, as the material is to be delivered from the machine continuously in an unbroken sliver.

Improvement in Fire-Arms. Eli Whitney, of Whitneyville, Conn. Dated, August 1, 1854.—Mr. Whitney claims the method of constructing the sear and lock-bolt in *one piece*, combined with the method of operating the same by the trigger and spring, so that the sear can not release the hammer, except when the chambered breech will be firmly locked in its proper position when constructed, combined, and operated; also, the combination of the trigger with the spring and the lock-bolt, (when the lock-bolt is of the *same piece* as the sear,) for locking the chambered breech, and discharging the pistol, when constructed and combined, substantially as herein described; also, the combination of the three springs (when they are all secured with one screw), with the catch-lever, trigger, and the lock-bolt and sear, when the whole is constructed, arranged, and combined, substantially as described.

LUBRICATING MATERIAL. WILLIAM LITTLE, of the Strand, County of Middlesex, England. Dated, August 1, 1854. Patented in England, July 14, 1853.—To 100 parts tallow, melted in a cauldron, add 235 parts of a solution of ten or eleven deg. B. of caustic soda in water. This mixture is boiled until saponification takes place, when ninety parts more of water are added, and the whole again boiled until the ingredients are thoroughly combined. To this add a potash soapy compound, prepared by seventy parts of a solution of caustic potash, equal to eight or ten degrees B., boiled with thirty parts of a fish or vegetable oil, until saponified. These two compounds being thoroughly mixed by boiling, are poured into a vessel containing 150 parts of the greasy oil distilled from the crude oil of coal, and the whole well mixed by stirring, until it acquires a thick consistence. This compound is to be used for the journals of railway carriages, etc. For ordinary machinery, mix two parts of the greasy oil with one part of the above mentioned soapy compound, add eight parts of water.

IMPROVEMENT IN TUBULAR BRIDGES. EDEN A. BALDWIN, of Elmira, N. Y. Dated, August 8, 1854.—This invention consists in constructing a tube of sufficient diameter for the passage of a railway train, using planks, or other suitable timbers, placed longitudinally and dowelled together, and the whole firmly bound with strong iron rods or hoops. For this purpose may be used oak plank, two or three inches thick, as the size or strength of the bridge may require, and of uniform width. The hoops or bands to be made of 1¼ or 1½ inch iron rods, which are first made of the necessary form and size, and set up at the distance of five feet apart. The planks are then laid in them, beginning at the bottom and proceeding on each side until they meet at the top, taking care that the ends shall break joints. The joints are all formed on an exact radical angle, on the principle of an arch, and each plank is dowelled to the next one with strong wooden pins, one foot apart. Then the bands are tightened.

IMPROVEMENT IN COTTON PRESSES. NATHAN CHAPMAN, of Mystic River, Conn. Dated, August 8, 1854.—The nature of this invention consists in having the hubs of the toothed wheels, on which the chains which raise the follower work, formed with recesses in them to receive the ends of the chains when wound up, and thereby cause said chains to exert a pressure inside of the bearings of said wheels, and retain the follower in its elevated or raised position, without any device being employed for that purpose.

IMPROVED MACHINE FOR UNITING PLATES OF METAL OF UNEQUAL THICKNESS. JEREMIAH CARHART, of New-York, N. Y. Dated, August 1, 1854.—This invention is for the purpose of uniting two plates or pieces of metal, of unequal thickness, by placing them together between a punch and die, with the thicker piece next the punch, and the thinner one next the die, and then, by pressure applied to the punch, forcing a portion of the thicker plate through the thinner one.

IMPROVEMENT IN MANUFACTURING PIGMENTS FROM IRON ORE. JOSEPH H. DAVIS, of Morristown, N. J. Dated, August 8, 1854.—Take pulverized hematite, or oxide of iron, place it in a reverberatory furnace or cylinder, heat it to about 1000 degrees Fahrenheit, and then introduce steam from about the same quantity of water as ore is used. The steam is decomposed, and, in proportion to the time in which the ore is exposed to the steam, different colors can be produced, from that of the yellow ochre to black.

METHOD OF COATING IRON WITH BRASS OR COPPER. HUGH BYRGESS, of Kentish Town, England. Patented in England, Feb. 17, 1853; in the United States, July, 1854.—The articles to be coated with copper, or alloys of copper, are to be first well cleaned in dilute sulphuric acid, as is well understood; they are then to be carefully washed in a dilute solution of chloride of zinc. The strength of the solution is made by adding about five parts of water to a saturated solution of the chloride, formed by dissolving zinc in hydrochloric acid, till action has ceased. Also the other soluble salts of zinc and tin may be used, and oxide of zinc deposited on the article to be coated, by holding it in the fumes of zinc during combustion. Oxides of zinc, made into a very thin cream with water, and applied to the iron article, carbonates of zinc treated in the same way, are all applicable for the process herein described, or, in place of zinc, cadmium may be used in like manner. The article, after having been well dried, when any of the above solutions have been used, may be heated to about 250 degrees, and may be plunged into melted copper.

A mixture of about two per cent. of zinc and one per cent. of tin to ninety-seven parts of copper, answers the purpose better than copper alone.

"I claim the coating of iron sheets, bars, bolts, and other forms of iron with copper or brass, by a combination of processes as follows: by first cleaning, then coating them over with a solution of cadmium or zinc, drying and dipping them into a bath of melted copper or brass, and raising them out of the bath into an atmosphere of steam and carbonic acid, flowing in streams or in jets, substantially in the manner described."

IMPROVEMENT IN RADIATORS. JOHN GEMMILL, of Mercer, Pa. Dated, August 8, 1854.—This invention is designed to prevent the great loss of heat which is occasioned by the ordinary construction of stove-pipes, in consequence of the passage of the current through the pipe, in obedience to the known laws of heat, without producing the amount of radiation which a more favorable construction would afford; it consists in placing upon the stove, in the situation usually occupied by the first two joints of pipe, a radiator of the form of two frustrums of cones joined at their bases, and in suspending within this case a deflector and regulator, consisting of an inverted cone and right frustrums, united at their bases, said deflector and regulator being lined with some non-conducting substance, and movable vertically.

IMPROVEMENT IN AIR-HEATING STOVES. NATHANIEL A. BOYNTON, of New-York, N. Y. Dated, August 8, 1854.—The fire-chamber is spherical, so formed as to cause the blaze and heat to be thrown off from the wood burned therein at the sides, and thus to radiate the heat at the outside of the fire-chamber, and next to the body of air surrounding it. By forming the fire-chamber in one piece, all leakage of gas is avoided, and the construction greatly simplified, while, from its form, great facility is given for unequal expansion and contraction, without injury.

IMPROVED TIRES FOR CARRIAGE-WHEELS. GEORGE SOUTHER, of South Boston, Mass. Dated, August 1, 1854.—This invention consists in applying elastic tires to carriage-wheels. The tire of the wheel is made with two projecting flanges all around, having a space between them for the elastic tire. An entire ring of vulcanized rubber is then stretched over the tire. For a pleasure buggy, make the tire of wrought iron $1\frac{1}{4}$ inch wide, the flanges $\frac{5}{16}$ inch deep inside, and $\frac{9}{16}$ inch outside; the space between the two flanges is about 1 inch, and the elastic strip is 1 inch wide and $\frac{5}{8}$ thick.

Irresistible Horse Bit.—A patent has just been issued to Messrs. Titus & Fenwick, of Brooklyn, N. Y., for a very ingenious and useful contrivance for stopping runaway horses, and placing the most fractious and powerful horse under the immediate control of all classes of riders and drivers, even to the most delicate female.

The nature of the invention consists in closing a horse's nostrils, so as to check respiration, and bring him to a stand-still, by means of pressure applied through ornamental, padded levers, attached to the ends of the bit-bar, and so arranged on the sides of the horse's nose, and attached to a rein, that, when the driver or rider pulls hard upon the rein, they are caused to move laterally toward each other like the jaws of a clamp, and close the horse's nostrils sufficiently to stop his breathing, and bring him to a stand-still. As soon as the driver lets the rein slack, the pads fly off, and allow the horse to breathe freely.

This bit is intended to take the place of the ordinary kind, and presents a handsome appearance when on the horse.

Improved Arrangement for Lathe Chuck. L. A. Dole, of Salem, Ohio. Dated, July 25, 1854.—The first part of this invention relates to the means employed for making the hole which passes through the hub, perfectly true, and the second part relates to the means employed for forming the shoulders in the same, after the central bore has been made true.

This invention consists in the employment of a self-centreing lathe chuck, consisting of a scroll screw and sliding holding jaws, in combination with a mandrel or screw passing through its centre, and having a cutter secured to its extremity, for the purpose of boring hubs perfectly true, said screw being fed, while boring, by a female nut attached to the barrel through which the screw or mandrel works. And, also, it consists in so constructing and arranging the feed nut, and combining it with a guage plate arranged on the mandrel, that it will be caused to adjust itself at the moment the shoulder of the hub has been cut of the required depth, and then be capable of turning with the screw, and allowing the cutter to square off the shoulder.

Improvements in Compositions for Bleaching and Stuffing Leather.—A patent has been granted to L. Woodbury Fiske, of Louisville, Ky., for improvements in bleaching and stuffing leather. This improvement includes two modes of bleaching, warm and cold. A large per cent. is saved in cost for producing, while the weight and fairness is enhanced. By chemical means an increased amount of "stuffing" is applied, and the surface coating of tallow that remains after drying, which by the old mode is "set off," is entirely forced into the body of the hide or skin, leaving the grain fibres free from "stuffing," which impairs the color, and the leather is produced with increased fairness and pliability.

Improvement in working Liming Vats in Tanneries.—A second patent has also been granted to Mr. Fiske, for improvements in tanning. The object of this improvement is to render the process of "liming," as now generally practised by tanners, as well as Mr. Fiske's own unhairing soak, more rapid, efficacious, and economical, to cause the hides and skins to come from the vats more "plump," fair, and free from lime in the pores than has been the case hitherto, at the same time preventing the formation of the pellicle on the surface of the liquid in the vats, the deposite of carbonate of lime and consequent loss of strength, and the labor and expense of frequent changes in lime thereby indnced.

IMPROVEMENTS IN FIRE-ARMS. JOSEPH C. DAY, of Hackettstown, N. J. Dated, August 8, 1854.—This invention relates, firstly, to a certain method of constructing the barrel, and connecting it with the stock and breech, for the purpose of allowing it to swing, and present the rear end of the bore for the reception of the charge; secondly, to certain means of making a secure and perfect connection between the rear of the chamber and a fixed breech; thirdly, to a certain arrangement whereby the caps are caused to be supplied from a magazine in the stock to the nipple as required, by the movements of the hammer in cocking and discharging the piece.

IMPROVEMENT IN SOFA BEDSTEADS. STANISLAS MILLET, of New-York, N. Y. Dated, August 8, 1854.—Mr. Millet claims, in combination with a spring-bottom, such as represented, the attaching of the sagging-bottom to the hinged head and foot-board, so that said sagging-bottom shall be strained over the spring-bottom, when the head and foot-pieces are dropped to form a bed, and serve the purpose of a lining between the mattress and the springs, when used as a sofa or lounge, substantially as described.

IMPROVEMENT IN RAILROAD CAR WINDOWS. GEORGE SPENCER, of Utica, N. Y. Dated, August 15, 1854.—This invention consists in combining with the side of a car, a revolving window, formed of two separate circular sashes, connected by hinges, so that one sash may be opened to its full extent, and having a small part of the circle cut off, so that, by revolving it upon its centre, a small opening may be made at the forward part of the window, whichever way the car may be moving, the residue of the window remaining at the same time covered.

NEW ENGLISH PATENTS.

ORNAMENTATION OF POTTERY AND GLASS. MESSRS. BALE & LUCAS, Staffordshire. *Patent dated Nov.* 1, 1853.—This invention relates partly to the production of various ornamental effects and patterns upon the surfaces of articles made of pottery, glass, slate, etc., especially those made of brick, tile, slabs, etc., of pottery, glass, enamelled and glazed iron, etc., and also to other architectural fittings. The improvements are applied in that part of the pottery manufacture known as "ground-laying." Another part of the invention relates to the imitating of marbled and partly colored work upon the materials above named, and also to printing ornamental patterns upon stone, slate, marble, etc. The new processes, so far as relate to the ground-laying, will be better understood by a short description of the modes at present generally employed in the manufacture. The outline of the intended pattern is first drawn on and pricked through tissue-paper, through which fine charcoal is rubbed or pounced upon the ware, leaving thereon a black outline. The parts intended to be white, or different from the ground, are then penciled in with a composition or "water stencil," made of rose-pink, sugar, and water. After this the piece is oiled and bossed with a dabber, to lay the oil on evenly. Upon this the required color, ground very fine, is dusted. After being dried, the piece is well washed in clear water. The stencil, being soluble, comes off, and the color is left on, forming the pattern. It is then cleaned, dried, and fired in the kiln. A variation in forming the outline is often used, by printing it instead of tracing or pouncing in, and transferring such printed

outline to the surface of the article, in the usual way of pottery transferring. In such case the outline is fired, after which the stenciling, oiling, grounding, etc., are repeated as before. In all cases, however, the outline only of the pattern is made merely to guide the stenciling, and in these processes every fresh coat of color requires a re-stenciling and repetition of the process.

The improved modes of ground-laying, or what may, by way of distinction, be termed "printed stencil ground-laying," consist of fully engraving the entire pattern, in place of engraving the outline only of the pattern on the copper. The brick or other article to be ornamented is sized with a mixture of Canada balsam and turpentine. An impression from the engraved plate is then taken in the usual way upon tissue-paper, the composition or stencil used being particularly adapted for printing purposes. It consists of about three parts of rose-pink, two parts of whiting, two parts of fine-ground flint, one part of lamp-black, one half part of sugar-of-lead, and two parts of resin, well mixed with printers' oil. The impression is then transferred to the sized surface in the ordinary way of potters' transferring. After remaining a short time, it is washed with soft soap and potash, to bring away the superfluous paper and size. In order to receive the ground, it is then oiled with Canada balsam and linseed oil, but without the usual bossing, after which the ground color is brushed, dusted, or laid on in any convenient manner. It is now ready to be fired with the "stencil on," which is loosened by the heat, and, on coming out of the kiln, the stencil is readily rubbed off with fine sand and water, leaving the color and pattern on the article, beautifully sharp and defined, and clean at the edges. Another part of the invention is the converse of the above, and is specially adapted for fine, delicate work. The entire pattern is engraved as before, and the brick or other article to be ornamented is then oiled over with Canada balsam and linseed oil, and is dusted over with the color which is intended as the ground. An impression in stencil is then taken on tissue-paper from the engraved plate, and is transferred to the moist surface of the article prepared as above. The printed stencil is then carefully peeled off, and brings away with it the color from all the parts of the article with which the printed stencil has come in contact, the other portions not touched by the print forming the pattern.

When gilding is required, ground gold is dusted on instead of the ordinary color. The pattern is then printed as before in stencil, and transferred to the surface of the article upon the gold; after which the article is washed with soft soap and potash, in order to bring away the superfluous gold and the oil from those parts not desired to be gilt. The article is then fired with the stencil on, which on coming out of the kiln is rubbed off, and leaves the gilt pattern under it firmly adhering to the ware.

The great feature of difference between the old and new modes is, that instead of having to draw the outline, and to pencil and stencil in by hand, the pattern is "printed" complete in stencil. The advantages gained are not only the obtainment of more beautiful work of any breadth or fineness, (which is done at a cheaper rate than the modes at present in use,) but delicate elaborate patterns, at present entirely unable to be attained, are easy and economical of execution. In addition, there are many other advantages, such as saving the cost and firing of the outline; doing away with its ragged edges; the trouble of bossing after oiling; the cost of cleaning and picking out the pattern; after washing off, being able to lay on as much color at one coat as required two and three applications in the old modes, and re-stenciling; and lastly, in being able to gild at the same time at a reduced cost.

In carrying out the invention upon articles where heat is not required, and

upon other substances, as stone, slate, wood, etc., which will only bear a slight temperature, some slight deviations will be necessary from the processes above described; and in ornamenting glass or other transparent substances, the process found most expedient is this: The pattern is engraved as before, and an impression is printed in black or any opaque color, and transferred generally to the back of the piece. The paper is then washed off, after which it is oiled to receive the ground color, which is brushed or dusted through perforated paper or oiled silk, or any other suitable medium. The piece is then sized with a solution of isinglass and water, and, whilst wet, gold-leaf is applied, and is seen through on the front side where there is no color. It is then finished by painting it over with any desired color. When applied to walls, floors, or anywhere which is likely to be damp, a coating of gutta percha or other water-proof substance is applied to protect it. By this means most beautiful effects can be produced for walls and floors; especially as landscapes, fruit, figures, and gilding can be represented, and saved from injury and wear by being done at the back.

In ornamenting opaque bodies not necessary to be fired, this last process is slightly varied. The piece is first sized with isinglass and water, and the gold applied as before; it is then dried a little and varnished, and afterward hardened to set the varnish; the print is then transferred to it, and the paper washed off, after which it is oiled and the color applied as before, and the whole is afterward varnished. Another simple mode of ornamentation adapted for chimney-pieces, pillars, etc., of stone, slate, wood, etc., is as follows: The article having been first cleaned and dressed, is painted over with the desired color; an impression is taken from an engraved plate of the pattern desired, in any ordinary way of printing, and transferred to the surface of the article to be ornamented. The paper is afterward washed off, leaving the pattern, as marble, etc., behind, which may afterward be varnished so as to keep it clean.

It will be evident, that the several modes described are admirably adapted, not only for general architectural purposes, as bricks, tiles, slabs, baths, chimney-pieces, doors, furniture, etc., but are capable of being applied to a variety of useful fittings, as tables, panels, pilasters, mouldings, ceilings, etc., either made of the materials themselves, or forming a species of inlaying and veneering. Bricks, blocks, pillars, and similar articles, too heavy and costly to be made entirely of glass, may be beautifully decorated by ornamenting the glass in the manner described, and then using it as a veneer.

Preservation of Iron by Stanno-Plumbating.—The Rev. N. Callan, of Maynooth College, the author of numerous improvements in practical science, has suggested and is now introducing a most important system of preserving iron from corrosion and general decay. He uses an alloy of tin and lead, or tin, lead, zinc, and antimony, recommending that the alloy should contain at least as much lead as tin, but not more than 7 or 8 parts of lead to 1 of tin. The iron is treated with such a composition, just as iron is usually coated with tin. In a series of experiments on the decomposition of water by the galvanic battery, the patentee found that concentrated nitric acid acted far more powerfully on lead than on iron coated with an alloy of lead and tin, in which the quantity of lead varied from 3 or 4 to 7 or 8 times the quantity of tin; and that the greater the proportion of lead contained in the alloy, the less it was acted on by nitric acid. He afterward made a variety of experiments in order to compare the action of strong nitric, sulphuric, and murjatic acid, as well as of diluted sulphuric and muriatic acid, on lead

and galvanized iron, with their action on iron coated with an alloy of lead and tin, in which the quantity of lead was about equal to, or from two to seven or eight times as great as that of tin; and from these experiments he concluded that iron coated with any of these alloys is far less oxidable and less liable to corrosion than lead, and infinitely less so than galvanized iron, the zinc coating of which is rapidly dissolved by the acids, even when they are greatly diluted with water. Hence, iron coated with an alloy of lead and tin, in which the proportion of tin is small, will answer for all the purposes for which sheet-lead, leaden pipes, and galvanized iron are employed. The mixture of a small quantity of zinc with the alloy of lead and tin, with which iron is coated, hardens the coating, but diminishes its power of resisting corrosion. However, a coating of lead, tin, and zinc is far less oxidable than the zinc coating of galvanized iron. The addition of a little antimony, which is a cheap metal, hardens the coating, and increases its power of resisting oxidation and corrosion. Stanno-plumbated iron may answer better than galvanized iron for the rope of iron wire by which the conducting wire of the submarine telegraph is protected, because the former will resist the corrosive action of the sea-water better than the latter. In a work published last year, Pouillet, lately professor in the Sorbonne, says that sea-water corrodes galvanized iron. In his interesting little book on the electric telegraph, Mr. Highton states that he saw, in the neighborhood of large towns, galvanized iron wires, an eighth of an inch thick, reduced, in less than two years, to the thickness of a sewing needle, by the sulphurous vapors arising from the coals consumed. It is very probable that these vapors would exert no action on stanno-plumbated iron. Stanno-plumbated iron is far preferable to lead, because it is much cheaper, much more durable, and much less affected by changes of temperature. It has also great advantages over galvanized iron. It may be employed for all purposes for which the latter is used; it is much more easily worked and repaired, because it is far more easily soldered; and it will answer for a great variety of uses, in which it may be exposed to the action of various corroding substances, such as acids, etc.; but for these uses galvanized iron is totally unfit, because the zinc coating is incapable of resisting the action of any acid. Stanno-plumbated iron, particularly if the coating contains a small quantity of antimony, will probably answer better than lead for vitriol chambers. It may sometimes be used instead of copper for the sheathing of ships, and bolts and nails of coated iron may be sometimes employed instead of copper bolts and nails. It may also be used for some of the purposes for which enamelled iron is employed, such as the enamelled cast-iron cisterns and pipes used in water-closets. At the last meeting of the British Association at Hull, Dr. Gladstone stated that owners of iron-built ships object to sugar cargoes, because the saccharine juices that exude from the casks corrode the metal. If the iron of which the ships are made were coated on the inside with an alloy of lead and tin, containing five or six times as much lead as tin, it is highly probable that the corrosion of the ships would be prevented. A small piece of an alloy of lead and tin, in which the quantity of lead was about five times as great as that of tin, was left in sugar dissolved in water for more than three months. After that period the alloy came out as bright as when it was put into the solution. Coating the iron on the outside would protect it against the action of the sea-water; and would be particularly useful for vessels intended for the West-India islands, where, it is said, the sea-water soon corrodes the iron. Stanno-plumbated iron is not more expensive than galvanized iron. First, because the coating of lead and tin need not be half as thick as the zinc coating, and therefore the quantity

of the alloy used in coating a given surface of iron will be far less than the quantity of zinc employed in galvanizing the same surface. Secondly, because spelter is very volatile, and therefore the waste of zinc in a molten state is much greater than that of the alloy of lead and tin. Thirdly, a greater degree of heat is required to keep zinc in a state of fusion, than to melt lead and tin. Lastly, since the proportion of tin need not be more than the seventh or eighth of that of lead, the alloy is very little dearer than zinc. From these reasons, it is clear that stanno-plumbated iron must be at least as cheap as galvanized iron.

Professor Airey's Pendulum Test of the Earth's Mass.—The following letter from Professor Airey to Mr. James Mather, of South Shields, enters somewhat into the details of the pendulum experiment in the Harton Colliery, on which we wrote last month: "It will be, I am sure, a matter of satisfaction to you to know, that the results of the computations of the pendulum vibrations gives the highest confidence in the certainty of the results to be deduced from them. The comparison of the rates of the pendulum, before and after their interchanges, shows that there is no evidence of their having undergone any mechanical change whatever, and almost positive evidence against their having undergone any change, amounting in its effects on their vibrations to 1·20th part of a vibration in a day. The immediate result of the computations is this. Supposing that a clock was adjusted to go true time at the top of the mine, it would gain 2¼ seconds per day at the bottom. Or it may be stated thus—that gravity is greater at the bottom of the mine than at the top by 1·19190 part. To go a little further into the interpretation. If there had been no coal measure, or rocks of any kind, between the top and the bottom, but merely an imaginary stand to support the pendulums, the gravity at the top would have been less than at the bottom by 1·8400 part nearly. But it is less by only 1·19200 part. And what is the cause of this difference? It is the attraction of the shell of matter, the thickness of which is included between the top and the bottom of the mine. The attraction of that shell, therefore, is the difference between the two numbers which I have given, or is 1·14900 part of gravity nearly. But if that shell had been as dense as the earth generally, its attraction would have been 1·5600 part of the gravity nearly. Therefore, the earth generally is more dense in the proportion of 149 to 56, nearly. You will remark that all these numbers are rough, and that to make their results available some small corrections are required (to which I have not alluded,) and some knowledge of the density of the different beds, &c., which I do not possess at present."

Manufacture of Caoutchouc. J. H. Johnson, London and Glasgow.—This French invention, which has been patented in England on behalf of MM. Guibal & Cumenge, relates to the recovery and utilization of the volatile ingredients used in dissolving caoutchouc in the process of manufacturing it, instead of allowing these ingredients to be lost by evaporation. This great saving is effected by placing the soft caoutchouc upon traversing cloths in closed chambers, provided at the top with a means of condensing the vapors, and carrying off the products, the material being heated by suitable apparatus beneath the traversing cloth. The caoutchouc, as it leaves the spreading rollers, is traversed over a horizontal table, consisting of upper and lower cast-iron plates, with an intervening place for the introduction of steam, hot water, or heated air. This table is covered in by a roofing of metal plates, set at convenient angles, the chamber being closed in at each end by triangular

metal plates, placed vertically. The roof is covered with felt, which is kept constantly saturated with cold water, supplied by a duct above, and which is again collected by gutters running along the lower edges of the roof-plates. The vapor rising from the material is condensed upon the under sides of the roof-plates, and, trickling down, is collected in suitable gutters; these gutters being carried completely round the chamber, and across the end-plates, so as to prevent any of the products of condensation from falling upon the caoutchouc beneath. The gutters communicate with suitable receptacles, into which the condensed matter passes; and this matter can be used over again repeatedly in the manufacture of the caoutchuc, thereby considerably reducing the cost.

MISCELLANY.

A Puzzled Pig.—One of our western farmers, being very much annoyed last summer by his best sow breaking into the corn-field, search was instituted in vain for a hole in the rail fence. Failing to find any, an attempt was next made to drive out the animal by the same way of her entrance; but of course without success. The owner then resolved to watch her proceedings; and posting himself at night in a fence-corner, he saw her enter at one end of a hollow log, outside the field, and emerge at the other end, within the enclosure. "*Eureka*," cried he, "I have you now, old lady!" Accordingly, he proceeded, after turning her out once more, to so arrange the log (it being very crooked) that both ends opened on the outside of the field. The next day the animal was observed to enter at her accustomed place, and shortly emerge again. "Her astonishment," says our informant, "at finding herself in the same field whence she had started, is too ludicrous to be described! She looked this way and then that, grunted her dissatisfaction, and finally returned to the original starting place; and, after a deliberate survey of matters, to satisfy herself that it was all right, she again entered the log. On emerging once more on the wrong side, she evinced even more surprise than before, and, turning about, retraced the log in an opposite direction. Finding this effort likewise in vain, after looking long and attentively at the position of things, with a short, angry grunt of disappointment, and perhaps fear, she turned short round, and started off on a brisk run; nor could either coaxing or driving ever after induce her to visit that part of the field." She seemed to have a "superstition" concerning the spot.—*Knickerbocker.*

Fire-flies.—In tropical climes, various luminous insects are attached to female head-dresses. They are used also as lamps. I have read fine print in a dark room by the light of two small Long Island fire-flies in a tumbler. But man was not the first to rob these living gems of their liberty and radiance. There are birds that seize and suspend them as chandeliers for their dwellings. The bottle-nested sparrow, or baya, is one of the kidnappers. Its nest is closely woven like cloth in the figure of a large, inverted bottle, with the entrance at the orifice of the neck. The interior is divided by partitions into two or three chambers, one over the other. These are profoundly dark until lit up with fire-flies caught alive, and mercilessly fixed to the walls or ceiling with pieces of wet clay or cow-dung for sconces.—*From "The World a Workshop."*

BENEFIT OF RAILROADS TO FARMERS.—We find in the report of the Michigan Central Railroad for 1853, the following list of farm products carried upon that road last year:

Apples, bbls.	25,912	Grass and Clover Seed, tons,	394
Barley, bush.	24,426	Salt, bbls.	13,936
Beans, bush.	1,064	Wool, tons,	593
Bran, etc., tons,	1,090	Cattle, alive,	4,012
Beef, bbls.	6,872	Garden roots, tons,	1,045
Butter, tons,	206	Hams, etc., tons,	323
Pork, bbls.	11,673	Hides, tons,	224
Pork, in hhds, tons,	2,104	Oats, bush.	115,295
Wheat, bush.	807,707	Plaster, tons,	2,613
Corn, bush.	260,931	Pelts, etc., tons,	212
Cheese, tons,	146	Horses,	584
Cranberries, bbls.	1,036	Sheep,	12,432
Dried fruit, tons,	339	Lumber, feet,	12,377,534
Flour, bbls.	416,863		

At a rough estimate, this would make upwards of 80,000 such loads as a common road wagon in Michigan usually takes to market, drawn by two horses, at an average, going and coming, of twenty-five miles a day, and would probably average six days for each load; say four hundred and eighty thousand days, or the labor of one thousand three hundred and fifteen men and teams every day for one year, to say nothing of back loads and transportation of live stock.—*Louisville Journal.*

BENDING SHIP TIMBER.—All the immense labor hitherto spent in rounding timber to suit ships, and houses, and machines, and furniture, and whatever other things require timber so curved, is now to be dispensed with by machines which can take the stateliest and straightest oak, and bend it like a Titan-bow, for the use of the proudest man-of-war, or the loftiest cathedral, and this, too, adding strength and durability to the wood! The first experiment has just been made on timbers sixteen feet in length, eight inches by ten, bent to as short a curve as can be used in ship-building. This machine is a large one, designed for ship timber, but there is another also ready for furniture, and both have just commenced operations. The place of action is Greenpoint, where there is a large foundry for making the machines, and large steam-vessels for steaming the timber, with other requirements included in the process. Henceforward all the delicate curves of steamers, frigates, or yachts, will be of solid timber, fashioned by this extraordinary innovation. So, too, the most ponderous rafters, such as bend in lofty arabesques over chapel or hall, may be composed of unbroken trees of the forest, yielding under this new and wonderful power of man. So, too, all the curvilinear beauties may be detailed by the same means. The statistics of the value of such a discovery are beyond the conception of the uninitiated. All the immense shipping and building interests of the civilized world are included in this discovery.—*N. Y. Tribune.*

AGRICULTURE IN FRANCE.—A letter writer for the *Republic* says: "A trip of six hundred and fifty miles, from the northern to the southern extremity of France, justifies me in the expression of my opinion that sun does not shed its rays on so fair a land, or one so thoroughly cultivated. The whole country is literally a garden. Every square foot, from the mountain-top to the lowest ravine, is made to produce something, if it be susceptible

of it. Their mode of planting or sowing their crops, whether on plain or hill side, produces the finest effect on the appearance of the landscape. The place allotted for each crop is laid out in squares, or parallelograms, with mathematical precision, and, whether large or small, the best garden could not be divided with greater accuracy. As there are no fences or hedges, and as the different crops are in various stages of maturity, you can imagine the variety of hues that meet the eye, and the magnificence of the panorama that stretches out in every direction as far as the vision can penetrate. I am sorry to add in this connection that seven-eighths of the agricultural labor is performed by females, while two or three hundred thousand stalwart men in uniform are idling away their time in the barracks of the cities and villages. In the absence of fences, cattle, secured by ropes, are driven about their pasturage by females; and sheep are confined within the required limits by boys, assisted by a shepherd's dog."

Premium Pianos.—We see by the official report of the late Fair of the Metropolitan Mechanics' Institute, held in Washington, that Messrs. Steinway & Sons were awarded the highest premium for their Semi-grand Piano, (which is, indeed, a perfect grand, in a square form,) and, also, the first premium for a 7¼ octave circular scale piano.

These instruments attracted much attention at the Fair, and public sentiment seemed to be in advance of the committee in awarding the premiums. And so universally were they liked, that Mr. S. sold not only those on exhibition, but received orders for several others. They are unsurpassed for strength, delicacy of touch, power, and sweetness of tone.

Opening of the Panama Railroad.—This gratifying event took place on the 20th ult., and the celebration was participated in by a large party of officers, stockholders, and invited guests, who were received with great demonstrations of rejoicing at Aspinwall, Panama, and the intermediate points. The transit was made in four and a half hours, and the management of the road and machinery gave abundant satisfaction. Henceforth, the tedious, expensive, and laborious passage of the isthmus, between the two oceans, which occupied days, will now be accomplished in a few hours.

Prince Barnum.—Phineas T. Barnum is surely the greatest man out. He has stuffed with soap, or other soft material, or covered with wool, (perhaps from the woolly horse,) the eyes of several ladies of this city, who are announced to act as a committee on babies, at the Museum, on some future day. Surely it must require the exercise of some power which few men possess to induce ladies so far to forget what is due their sex as to occupy such a position.

A New Anœsthetic Agent.—Professor Dugas, in the Medical College of Georgia, a few days since, had to extirpate a large tumor on the back weighing about ten pounds. He surrounded the base of the tumor with the freezing mixture for four or five minutes, which so obtunded the sensibility of the parts that the operation was performed with comparatively little pain.

Fruit Trees.—It is a theory among fruit growers that the peach is destroyed by cold, when the thermometer reaches 10 degrees below zero, and that this tree cannot live when the temperature is at that point; but an examination of the trees, in the western part of this state, fails to show that any injury has yet been received.—*Rochester Adv.*

PROGRESS IN ARKANSAS.—The State of Arkansas has just completed a census of the State for 1854. The following is the result as compared with 1850:

	1824.	1850.
Population,	253,117	209,887
Whites,	119,224	162,189
Slaves,	60,279	47,100
Free colored,	614	608
Acres land cultivated,	857,180	781,530
Bales of cotton produced,	160,779	65,344
Corn, bushels, 1853,	11,536,969	8,893,939
Wheat, do.	332,535	199,639
Oats, do.	1,040,506	656,283

It appears from this that the increase was as follows, viz:

Increase of population,	21
Increase of whites,	20
Increase of slaves,	27
Increase of lands cultivated,	10
Increase of cotton produced,	150
Increase of wheat produced,	130
Increase of oats produced,	50
Increase of corn produced,	50

MANUFACTURE OF NEEDLES.—The number of processes through which a needle goes in its manufacture is as follows: 1, wire received; 2, weighed; 3, gauged; 4, cut; 5, rubbed; 6, counted; 7, pointed; 8, washed; 9, cut back; 10, pointed at the other end; 11, examined; 12, counted; 13, washed; 14, weighed; 15, annealed; 16, stamped; 17, pressed; 18, spitted; 19, piled; 20, broken; 21, heads piled; 22, oil burnt off; 23, soft-straightened; 24, evened; 25, counted; 26, hardened; 27, evened; 28, stropped; 29, tempered; 30, weighed; 31, examined; 32, picked for crooks; 33, hard-straightened; 34, counted; 35, scoured with seven emeries, washed and evened between each; 36, washed and dried; 37, weighed; 38, evened; 39, headed; 40, weighed; 41, ground at the point; 42, weighed; 43, scoured with one emery, and glazed; 44, weighed; 45, washed and dried; 46, weighed; 47, evened; 48, headed; 49, picked for waste set; 50, weighed by count; 51, set; 52, examined; 53, weighed for drillers; 54, blued; 55, drilled; 56, rubbed; 57, weighed from drilling; 58, examined; 59, rounded by finishing; 60, finished once; 61, rubbed; 62, finished again; 63, rubbed; 64, examined; 65, counted in 25's; 66, papered; 67, labelled; 68, tied up; 69, collected; 70, packed up.

WARM FEED.—A correspondent of the *N. E. Farmer* gives the following fact relative to the management of one of his cows, and its result: "I will give your readers my mode of feeding one of my cows. I purchased her last November, when she gave four quarts of milk a day. I commenced feeding her with cut hay, two quarts of shorts, and a few carrots, wet with cold water, twice a day for one month. At the end of that time she had not increased in her milk at all. I then commenced wetting the same amount of feed with boiling water, and, at the end of the second month, she gave regularly *six* quarts per day, which I thought a fair gain. Where a person needs considerable milk, and keeps but one cow, I would recommend a trial of this mode of feeding."

A SINGLE pound of flaxen thread, intended for the finest specimens of French lace, is valued at six hundred dollars, and the length of the thread is about two hundred and twenty-six miles. One pound of this thread is more valuable than two pounds of gold.

THE LAWTON BLACKBERRY.—We have had many enquiries in regard to this fine fruit, a full description of which was given in our October number, p. 210. We have asked the opinion of many of our friends who fruited it last year, and, without exception, they speak of it as well deserving the encomiums given it. J. B. Lawton's office is at 54 Wall street, N. Y.

LEWIS HOUSE, BINGHAMTON, N. Y.—Some of our friends have found a temporary home in this well known hotel, now kept by Messrs. Davis & Morris, and report it as a very pleasant, and, in all respects, satisfactory place for the traveler. It is only a minute's time from the depot, with a good walk, the whole distance. Patronize the deserving.

☞ WE commend the experiments of Prof. Campbell, p. 590, to the attention of all agriculturists.

GENERAL AGENCY.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

SCHOOL-TEACHERS. — Having had occasion to furnish teachers for some of our Southern friends, we have been fortunate enough to learn of several young ladies who are admirably well qualified for families or schools, and if any are in need of such, a letter addressed to us will receive immediate answer. We shall not fear to guarantee that any reasonable expectations will be fully met. Some of them are desirous of going South.

NEW BOOKS.

HARPER'S GAZETTEER OF THE WORLD.

All the numbers of this ponderous work are now published, and taken together they embody a vast deal of information in a very small compass. Large and well-drawn maps also illustrate the text. The whole execution of the work is in excellent style. It is impossible that perfect accuracy should be attained in all these descriptions. The longer articles exhibit evidence of great care and extensive research. Under some of the minor titles we have detected a few errors that are worthy of correction, on the part of purchasers as well as future publishers. The following now occur to us:

Windham, Essex County, Mass. There is no such town, nor never was.

Rowley, Essex County, Mass., does not contain any academy.

Dummer Academy, in Newbury, parish of Byfield, is less than half a mile from the northern boundary.

Woodstock, Windsor County, Vt., does not contain any academy, but an excellent public school. Nor does it lie "on" nor within less than eight miles of "the Ver-

mont Central Railroad." Windsor, in same county, contains a large gun factory, omitted in the description, the business of which is worth more to the town than all the mills actually mentioned. Nor is Windsor a "capital" of the county, unless a single session, annually, of the circuit court of the United States makes it such, while all the county buildings and county office are at Woodstock.

In Newburyport, Essex Connty, Mass., there is a monument erected in a church to the memory of Whitefield, some twenty feet from the pulpit, while the bones of the venerable man lie in a tomb under the pulpit. Such would not be the idea from the language used by the compiler. The church is the First Presbyterian, in Federal street.

COMPENDIUM OF HYGIENE; compiled for the use of the Winsted Hygienic Association. By LUCIUS MILLS, Physician to the Association. West Winsted, Conn. 1855. For sale by Fowlers & Wells.

We have here a small manual, 190 pages, designed more for the nurse than the physician; and the author wisely, we think, recommends the substitution of the former for the latter, in many cases where hitherto the *doctor* is sent for. At least, he thinks this preferable, unless the physician is in reality a skillful man. We must confess that we have seen and known too much of medical students to look upon the large majority of them otherwise than with entire contempt, while the few we honor as among the most deserving and the most useful of men. A skillful physician and a good man, in one person, has our heartiest sympathies and our profound respect.

This manual instructs us wisely, no doubt, in the proper use of food, diet, bathing, exercise, &c., as a proper substitute, often, for medicine, in many of the diseases to which we are exposed, and also gives directions for the treatment of wounds, poisons, &c. The author is a rational hydropathist. He is not inclined to drench us to death in attempting to cure every disease by the one process, but commends the use of different baths in a variety of cases. Recipes for gruel, farina, sago, rice, &c., &c., for the sick room, are also inserted. An "Addendum" directs us fully and judiciously, we think, in the cure of dyspepsia, by the "motorpathic" treatment. This is in a separate pamplet. We have no doubt the author has done his community and others a very good service in these pages.

BOTANY OF THE SOUTHERN STATES. In two parts, &c. By PROF. JOHN DARBY, A.M. New-York: A. S. Barnes & Co.; Cincinnati, W. H. Derby; Savannah, John M. Cooper. 1855. 12mo. 612 pages.

We have examined this volume with much satisfaction. It is well arranged; the topics are well treated, and it is throughout what it should be. The former part of the volume (164 pages) is occupied with the elements of the science, and physiology; this is followed by the Linnean system and the "Dichotomous Analysis;" and then comes, commencing page 200, Descriptive Botany. A Glossary, and Indices finish the volume. If we must find fault with any thing, it must be the phrase, "Dichotomous Analysis," as a new word and unnecessary, though expressive. The term used by Wood, for the same thing, is "Synopsis of the Natural System." This is the fact. It is also "dichotomous;" since, we ever have a choice between two dissimilars till we are brought to the natural order. We commended Wood very highly, as vastly superior to any thing before published. He must now divide the honors with Mr. Darby. This last book is to the South what Wood professes to be for the whole. How full Mr. Wood is in the Southern Flora, we have had no means of ascertaining. He is full for northern latitudes. Mr. Darby describes the Flora from lat. 30° to 35°, "including South Carolina, Georgia, Alabama, parts of North Carolina, Florida and Mississippi." The book is eminently worthy of extensive patronage throughout.

MESSRS. LONG & BROTHER, Publishers, 121 Nassau street, New-York, have in press, an Autobiography of an Orphan Girl. By ALICE GREY. A tale of real life, whose characters still play their part on the world's stage.

THE SLAVE OF THE LAMP. By MRS. NORTH, a well-known author; and THE WATCHMAN, illustrated by living characters—more anon. Price, $1 each.

THE GARDENER'S TEXT BOOK, containing practical directions for the formation and management of the kitchen garden, and for the culture and domestic use of its vegetables, fruits, and medicinal herbs. By PETER ADAM SCHENCK, formerly gardener to Edward C. Williams, Esq. Boston: John P. Jewett & Co.; Cleveland, Jewett, Proctor & Worthington. 4th 1000.

We have before commended this work. It gives us full instructions in the location, arrangements, and cultivation of the garden; and the tools adapted to such service as is required, and the mode of using them. The proper culture and use of the various roots, medical herbs and other vegetables is fully set forth. The whole can not fail to be highly useful.

KATE AYLESFORD; a story of the Refugees. By Chas. J. PETERSON. Philadelphia: 112 Chestnut street; Boston, Phillips, Sampson & Co.; New-York, J. C. Derby.

An "advance copy" of this came to hand too late for a general reading. It claims to be a historical novel of superior merit. We notice from the titles of the chapters, that it contains many exciting scenes of shipwreck, fire in the woods, abduction, pursuit, rescue, &c., and ends with a "wedding in 1780."

P. S.—A friend who has read this commends it highly.

FIRST LESSONS IN GEOGRAPHY. By JAMES MONTEITH. New-York: A. L. Barnes.

This little book is National Geographical Series, No. 1. It is well suited for its object, as given in the title, and is very handsomely executed. It contains, as it should, many very good illustrations, maps, &c.

List of Patents Issued

FROM FEB. 7, TO FEB. 27, 1855.

James Allen, of Frease's Store, Ohio, improvement in clover hullers.

Wm. H. Allen, Lowell, improvement in machines for chopping meat and other substances.

Hiram Berdam, New-York, improvement in life boats.

Thomas D. Aylsworth, Frankfort, New-York, improvement in hop frames.

H. Clark, Newport, Fla., improvement in cotton gins.

E. B. Clement, Barnet, Vt., improvement in churns.

George Daniels, Philadelphia, improvement in the threshers and cleaners of grain.

John Dick, New-York, improvement in stays for articles of dress.

Henry T. Dexter, Zanesville, improvement in wharf boats.

G. Esterly, Heart Prairie, Wis., improvement in ploughs.

James Esterly, Albany, improved magazine smoke consuming pipe.

Phineas Emmons, New-York, improvement in cracker machines.

H. W. Evans, Philadelphia, improved spirit levels.

Asahel Fairchild, Ashland, Ohio, improvement in steam boiler chimney.

Wm. Fuzzard, Newark, improvement in machinery for felting hat bodies.

John W. Haggard and George Bull, Bloomington, Ill., improvement in rotary ploughs.

Alonzo Hitchcock, Chicago, improvement in weather strips for doors.

George H. and Benjamin H. Horn, Brooklyn, improvement in sewing machines.

Fred. Howes, Yarmouth Port, Mass., improvement in ships' standing rigging.

Wm S. Maclaurin, New-York, method of teaching penmanship.

Matthew H. Merriam, Chelsea, Mass., and J. B. Crosby, Stoneham, Mass., improvement in leather splitting machine.

Robert J. Morrison, Richmond, Va., assignor to himself and Edwin A. Morrison, Lawrenceville, improvement in grass harvesters.

Josiah H. Noyes, Abington, Mass., improvement in lamp extinguishers.

Jefferson Parker, Louisville, improvement in machines for slaughtering hogs.

S. N. and Wm. F. Stillman, Leonardsville, N. Y., improvement in garden rakes.

Wm. D. Titus and Robert W. Fenwick, Brooklyn, improvement in bridle bits.

Ira Reynolds, Republic, Ohio, improvement in ploughs.

John Tremper, Philadelphia, improvement in steam valves.

J. N. Williams, Dubuque, improvement in head sppporters for railroad cars.

A. B. Childs and H. W. Dickenson, Rochester, N. Y., for method of feeding paper to printing presses by machinery.

E. A. Forbush, Ashland, Mass., improved sewing machine.

Frederick Denzier, N. Y. city, new form of bank lock.

G. B. Clarke, Leonardsville, N. Y., chimney safe.

Geo. Blanchard, Washington, D. C., life-saving raft.

Levi Bissell, N. Y. city, improved metallic spring.

J. H. Bennett, Bennington, Vt., straw cutter.

C. R. Barnes, Oswego, N. Y., mill stone dress for hulling rice.

Yarnall Baily, West Chester, Pa., fluid burners.

S. H. Noble, Westfield, Mass., screw wrenches.

J. S. Keith and J. Brooks, Canton, Mass., bullet moulds.

G. P. Ketchum, Bedford, Ind., new method of driving pairs of reciprocating saws.

Gustavus Hammer, Cincinnati, Ohio, pump valves.

C. C. Hall, Portland, Me., manufacturing paper from resinous barks.

Daniel Haldeman, Morgantown, Va., improved harrow.

Joel Hastings, James Ramsey and H. G. Chamberlain, St. Johnsbury, Vt., machine for cutting tenons.

Joseph G. Goshon and S. M. Eby, Shirleysburg, Pa., maize leaves as a substitute for tobacco.

Samuel Wetherill, Bethlehem, Pa., mode of manufacturing zinc white.

Carriangton Wilson, N.Y. city, improved griddle.

Thos. Tripp, Sandy Creek, N. Y., improved water wheel.

G. N. Todd, Dundaff, Pa., self-regulating water gates.

Samuel Taggart, Indianapolis, Ind., new method of feeding flour bolts.

Wm. Stephens, Richmond, Ind., slide rest for engine lathes.

Sauuel R. Smith and Elijah Cowels, Hadley, Mass., machine for cutting wood into slivers.

Wm. Sage, Durham, Conn., air heater.

W. C. Sanford, Meriden, Conn., improvements in skates.

J. A. Robinson, Poplin, N. H., hand cultivator.

Jacob Pierson, Alexandria, Va., machine for manufacturing hoops.

J. T. Ogden, assignor to himself and Thomas Goddard, Boston, Mass., carriage windows.

C. W. Brown, Boston, Mass., assignor, to G. W. Banker, Watertown, Mass., and G. O. Carpenter, South Reading, Mass., for improved paint mill.

Henry S. Ackerly, New-York, improvement in piano forte frames.

J. Bale, of Buffalo, improvement in hotel annunciators.

James B. Blake, of Worcester, Mass., improvement in gas cooking-stoves.

S. R. Bryant, of New-York, improved anchor tripper.

Henry V. Corbett, Buffalo, improved mode of raising sunken vessels.

Wm. B. Emery, of Albany, method of adjusting cylinders in boring machines.

Wm. B. Emery, Albany, method of adjusting stuff in planing machines.

Ammi M. George, Nashua, improvement in machines for making chain links.

Daniel B. Neil, Mount Gilead, Ohio, improvement in repeating single barreled firearms.

Amos Nudd, Exeter, N. H., fire-engines.

Obadiah Merland, Boston, improvement in rollers and dryers, for paper-making.

Chas. Miller, New-York, improvement in machines for making butt hinges.

Chas. Morris, New-Haven, improved machine for shecoring leather straps.

Zadoc Pangborn, Algonac, Mich., improvement in the construction of vessels.

F. Peale, Philadelphia, improvement in propellers.

Robert Romaine, Montreal, improvement in seed-planters. Patented in England, May 10, 1853.

George S. G. Spencer, Boston, improvement in hot air furnaces.

Wm. Steele, Wheeling, turning machine.

Joseph Stevenson, Wheeling, Philadelphia, bed boat or life preserver.

John Stull, Philadelphia, improved stereoscope case.

Wm. L. Young, Muscatine, Iowa, machine for cutting barrel heads.

Lewis Teese & Son, San Francisco, improvement in forks for gold diggers. Ante-dated November 22, 1854.

Jeremiah P Smith, Hummelstown, Pa., improvement in corn shellers.

Hiram Hawley, Rome, N. Y., mandrel for holding carriage hubs, &c.

D. W. Hughes, New-London, Mo., improvement in hemp brakes.

Wm. V. Gee, New-Haven, assignor to the Atwater and Bristol Manufacturing Company of same place, improvement in looms.

Alex. Kirkwood, Jackson Co., Miss., method of pumping water out of vessels.

Asa Landphere, Albion, Pa., and Samuel Remingtun, Ilion, N. Y., spoke machine.

Peter Lear, Boston, improved method of arranging and operating submerged horizontal paddle wheels.

Chas. Leavitt, Quincy, improvement in portable grain mills.

Martin H. Mansfield, Ashland, Ohio, improvement in hulling and cleaning clover seed.

F. Russell, Boston, improvement in mowing machines.

Thomas C. Ball, Walpole, improvement in screw jacks.

Andrew J. Burnhart, Schoolcraft, Mich., improvement in seed planters.

David Russell, Drewsburg, Ind., improvement in spade ploughs.

Jno. Haslam, New-York, and Jas. Haslam, Searsdale, (sole heirs of Joseph Haslam, deceased) improvement in covering thread with wool or silk.

Daniel W. Messer, Boston, assignor to himself, R. B. Fitts, and Albert James, of the same place, improved hand stamp.

Horatio N. Gambrill, and Singleton F. Burgee, of Woodbury Mills, Md., improvement in carding machines. Patented in England, August 22, 1854.

Jehu Hollingsworth, and Ralph S. Mershon, Zanesville, improvement in firearms. Patented in England, August 1, 1854.

Ralph S. Mershon, and Jehu Hollingsworth, Zanesville, improvement in repeating firearms. Patented in England, August 1, 1854.